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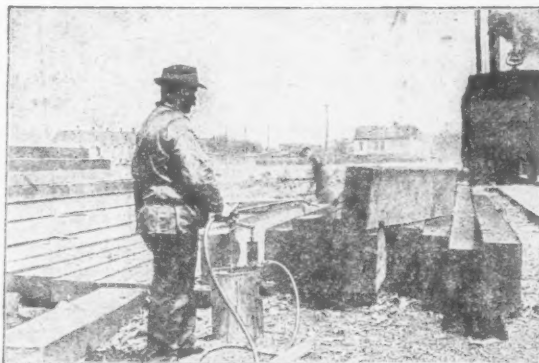
NUMBER 300

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American Forestry



An Illustrated Magazine about Forestry and Kindred Subjects Published Each Month by the American Forestry Association, Washington, D. C.



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"The Unpardonable Sin"

"The unpardonable sin of the business world of the future will be—waste."

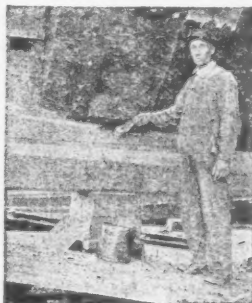
"Waste of material or labor—of time or of money—and only less heinous in degree than the sin of commission will be the sin of omission."

These quotations are extracted from an excellent editorial of the same title appearing in the October 15th issue of "The Gulf Coast Lumberman." They are equally applicable to the waste that results from failure of protecting structural wood against decay.

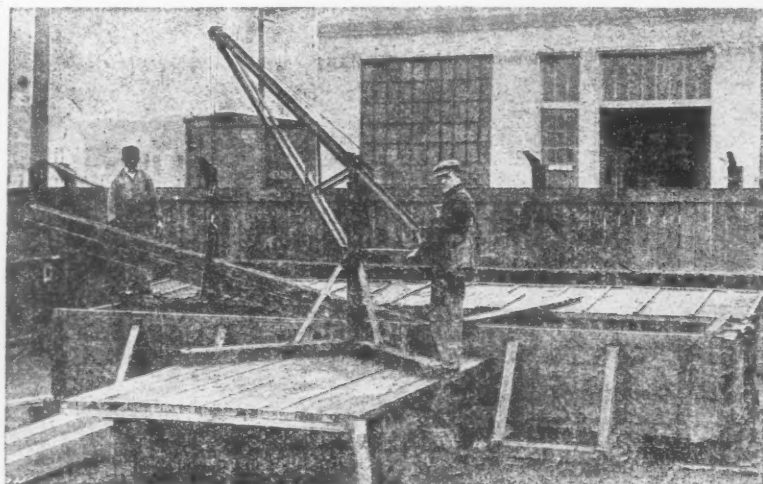
The "Sin of Omission" is neglecting to become informed regarding the practice of wood preservation and the potential economy of its application.

The "Sin of Commission" is willful disregard of the factor of durability—the attitude of "taking a chance;" the erection of timber structures where influences favorable to decay are known to exist, without employment of remedial measures.

(Green wood cannot be effectively creosoted by non-pressure processes. It should be air-dry. In regions of moist, warm climate, wood of some species may start to decay before it can be air-dried. Exception should be made in such cases, and treatment modified accordingly.)



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To Our Members, Greeting!



LOOKING back over the past year the members of the American Forestry Association have much to be thankful for. Looking forward to the New Year they have much to hope for.

For their loyal support, which has never been firmer than in the days when it was of most service to their country, we desire most cordially to thank them. We are confident that this support will be continued in the future and that it will grow stronger with the passing of the years.

In various ways, as it was able, the Association has contributed to the cause of Democracy and of Freedom. Its assistance in the fight for Right and Justice has been possible only because of the consciousness that all its members, every last one of them, were with the Association in this patriotic work.

What the American Foresters have done in this country and in France in getting out the timber for airplanes, wooden vessels and other war needs, is the subject of just pride to the entire nation. For the encouragement given these strong and noble men and for the deserved comforts provided for them through the Welfare Fund, we thank our members most heartily.

These efforts have helped to bring to the World once more a Merry Christmas and a Happy New Year. For this great Gift we are most sincerely thankful.



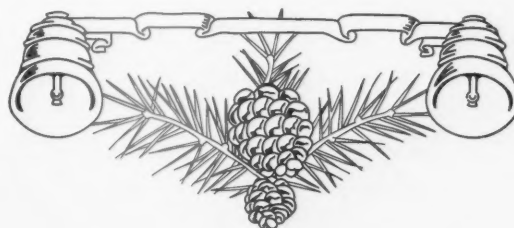
AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

PERCIVAL SHELDON RIDSDALE, Editor

DECEMBER 1918

VOL. 24, No. 300



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ON THE SAN JUAN NATIONAL FOREST
A beautiful water fall, with a drop of three
hundred and fifty feet

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THE REFORESTATION OF FRANCE

To the Members of the American Forestry Association:

TO OFFER to the French Government the services of the American Forestry Association in aiding to replant French forest land destroyed by the contending armies, Mr. Percival S. Ridsdale, editor of American Forestry magazine and Executive Secretary of the American Forestry Association, sailed for France on December 16 for a conference with French Government officials in Paris. France lost more than 1,250,000 acres of forest through war's destruction and over 60 per cent of the merchantable timber in the remaining forests was cut for military uses. Because of this condition France needs large quantities of forest tree seeds to restore this large area in its Northern and Eastern sections. American Forestry Association officials have devised a plan by which there may be gathered in this country the great quantities of such tree seeds as may be desired by the French Forestry Department.

WHAT the destruction of these forests means to France is eloquently told in an article by Henry S. Graves, United States Forester and Vice-President of the American Forestry Association, on the adjoining pages. These facts will emphasize in the mind of every American who appreciates the great sacrifices that France has made in the war, the manner in which the American Forestry Association and its members may be of assistance in restoration work in that country.

MR. RIDSDALE will, while abroad, not only make a tour of the forest regions in the war area of France, but also of the area in other sections which has been largely cut over by United States and Canadian forestry regiments. He will investigate the forestry situation in Great Britain, Belgium, and Italy for the purpose of preparing a series of articles and of securing a quantity of photographs to illustrate them. These articles will be presented upon his return in AMERICAN FORESTRY and are expected to be of great general and economic interest to all the members of the Association and to all the readers of the magazine. Further announcement regarding these articles will later be made in the magazine.

IT gives me pleasure to wish the members of the Association a very happy Christmas and a prosperous New Year, and I hope that their co-operation in the work of the Association will be inspired by the very important work which the Association as I have outlined has undertaken.

CHARLES LATHROP PACK, President.

AMERICAN FORESTRY

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NO. 300

EFFECT OF THE WAR ON FORESTS OF FRANCE

BY COL. HENRY S. GRAVES, CHIEF FORESTER

FRANCE has given her forests to the needs of the war. It is one of her many great sacrifices. The consequences of the depletion of her splendid forests will be far-reaching and will be felt by the nation for many years. The burden is already felt by the people through local scarcity of forest materials and through high prices. France will have to import most of the timber needed for reconstruction. Many home industries

War always makes serious inroads into the forests of a country at war. This is especially true of the country in which the fighting is carried on. This is partly due to the destruction of forests in the fighting area, and partly to the great demands for lumber and other wood products of all kinds for temporary engineering work.

No war in the past has ever made such a call upon



Photograph by Underwood and Underwood

AFTER THE GOD OF WAR HAD PASSED

The forests of France, like the ruined villages, must be rebuilt. From those that were under severe fire almost no salvage is possible. What was not split or smashed was filled with shrapnel splinters making it impossible to saw a board or crosstie. Even when the fighting was less severe the destruction was great. This is a view in *Le Bois Etoile* (Wood of the Star) on the Somme.

dependent upon wood have ceased to exist. Thousands of people supported by work in the forests and wood-using factories have lost this source of employment. The high cost of wood, which must be imported, is an added burden on every undertaking requiring the use of forest products in any form. And if the continuance of the war had required the cutting of the forests within the protective zone of the mountains, there would have been a repetition of the same damage through floods which France has at great cost been struggling to control.

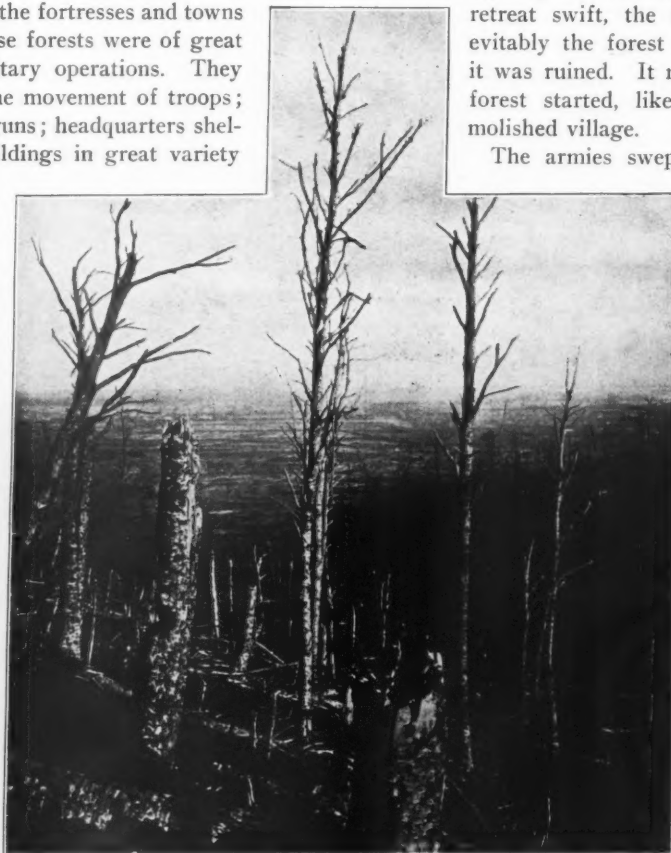
the forests for materials. There is no combatant country in Europe that was not during the war heavily drained of its available forest resources, and this applies as well to a number of the neutral countries and the drain will continue during the reconstruction period. The greatest burden fell upon France. Extensive forest areas in the fighting zone have been utterly ruined, but the forests in the rear were also drawn upon to supply nearly all of the wood materials used by the Allied armies on the west front, as well as the local war industries.

Shell-fire Destruction

The forests of Northern France within the fighting zone shared the fate of the fortresses and towns for these forests were of great importance in the military operations. They were used to conceal the movement of troops; batteries and machine guns; headquarters shelters and temporary buildings in great variety were hidden under their cover; their very character, thick standing trees often with dense undergrowth of small trees, made them natural positions for defensive works. They became objectives for attack and came under heavy shell fire. Under such conditions they were utterly demolished. A few snags, splintered stumps, shattered trunks and limbs now remain as testimony that once a forest existed. When a forest was under severe fire the damage was so great that there was almost no salvage. What was not split, cracked or smashed, was filled with shrapnel splinters, making it

impossible to saw a board or cross-tie. Where the fighting was less severe and the movement of retreat swift, the damage was less, but inevitably the forest was so badly broken that it was ruined. It must be cleared and a new forest started, like the rebuilding of a demolished village.

The armies swept back and forth over a vast strip of country leaving ruin in their path. Behind the German lines the enemy drew freely on the French forests for materials needed in the military operations. The victorious Allies found the German trenches constructed of heavy timbers. It was from the French forests. As the enemy was pushed back, ruin awaited the forests like those already wiped out. And the same was true of the orchard and roadside trees. What did not fall victim to shell fire was deliberately destroyed. The cathedrals of nature like the cathedrals built by man became the object of the de-



HEROES OF THE WAR

Shattered remains of once stately trees that covered a beautiful hillside in France and sacrificed their lives to the cause of humanity and justice—as did the men who fought and fell near them. Thousands of square miles in northern France present a similar desolate appearance.



Photograph by International Film Service

RUINED FOREST IN NO MAN'S LAND

France had built up her forests by years of thrift and careful planting and conservation. Even before the war she had been compelled to import annually a considerable amount of lumber for various purposes. The sacrifice of her trees was an almost priceless gift to the cause of the Allies. These she gave freely, as she gave her sons.

structive genius of the Hun. Altogether about one and one-quarter million acres of forest were within the territory occupied by Germany, including her advance of 1918. There will be some salvage from these forests, but mostly in the form of cordwood or other small material. Formerly, each year the annual growth expressed in material large enough for saw logs and cross-ties, aggregated $17\frac{1}{2}$ million cubic feet, or roughly 120 million board feet. The forest capital, with its power to produce annual growth, was largely destroyed and will have to be rebuilt through long years of patient effort.

forward over an utterly devastated land. Where formerly the men immediately in the rear could be billeted in villages, there existed no longer any villages near enough for the purpose. Demountable barracks were needed in vast quantities. In their absence tents had to be used. With the arrival of the United States army in France there were required many buildings in the rear, for training camps, hospitals, storehouses and innumerable other buildings of a temporary character. Great docks had to be constructed, requiring piling, square timbers, and lumber in large quantities. The



Photograph by Underwood and Underwood

"THE DEAD HILLS OF THE MEUSE"—ONCE FAIR-WOODED HILLSIDES

In such pitiable condition have hundreds of square miles of hillside and valley been left in the land over which the German vandals advanced. There were about 1,250,000 acres of forest within the territory in France occupied by Germany. Splintered stumps and shattered trunks and limbs bear witness to the noble forests which once existed.

**Forest Depletion
Behind the Lines**

The depletion of France's forests is by no means confined to the fighting zone. The forests in the rear, from the battle line to the Pyrenees, from the coast to the Swiss border were during the war filled with wood cutters feverishly bringing out material for the use of the armies, for the Navy, for the war industries, and for essential domestic use.

The demands for wood materials by an army are almost limitless. For barracks alone there is always a call for more and more lumber, especially when as in the war just ended literally millions of men were moving

engineers had to have hundreds of thousands of cross-ties for the railroads, poles for new telephone and telegraph lines, lumber and timbers for tunnels and bridges, plank and logs for repairing roads, pole-wood and lumber for trench construction, firewood for fuel, and so on in a long list of varied uses of the products of the forest.

Practically all of this material for the armies of the West had to come from the forests of France because importations by sea were necessarily cut down to the minimum on account of the need of shipping for men, equipment and supplies that could not be secured locally.

Early in the war France, just as England, was able to import considerable quantities of lumber. By 1917 shipping could no longer be spared for the purpose, and at the same time, especially through the entry of this country in the war, the requirements for wood products were enormously increased. It was then that France opened her forests to the Allies.

Canadian forestry companies were transferred from England and Scotland to France with their sawmills and logging equipment. American forestry

France's Forest Resources

Relatively speaking, France has extensive forests. These she has built up by years of thrift and careful forestry. Areas formerly denuded were reforested, abused forests were gradually brought into productive condition and from year to year France was increasing her home production of forest materials. The total of land classed as forest in France aggregates nearly twenty-four million acres. Of this only about one-third, or eight million acres, is classed



Underwood and Underwood—British Official Photograph

LAND TO BE REFORESTED

Great stretches like this in northern France remain showing some of the vast work of reconstruction which must be undertaken to put the country back on its feet again. This shows British soldiers on the battlefields near Ypres setting out to put up wire entanglements.

regiments were organized and about eighteen thousand of our foresters and lumbermen were soon operating in France.

In addition to the American and Canadian loggers and millmen, there were large forces of French engineers, civilian lumbermen, foreign laborers, and German prisoners working in the forests.

as high forest, that is, forest producing primarily trees of the larger sizes and better quality. About twenty-five per cent of the forest is so-called coppice, or hardwood sprouts, grown on short rotations of twenty-five to thirty years, chiefly for fuel. The balance is a combination of two forms of forest, an understory of coppice with a light cover of older trees, called coppice under standards.

The area actually carrying trees large enough for the saw is therefore not as large as is suggested by the total forest area of the country. When, too, one speaks of eight million acres of high forest, it should be recalled that only a proportionate part carries merchantable

France has several main centers of timber production. The largest is in the flat, sandy plains north of the Pyrenees Mountains. Here is an area of some two million acres largely covered with Maritime Pine, a region once unproductive and backward and now the



Photograph by Underwood and Underwood

WOOD HAD A THOUSAND USES

The forests of France, not only in the fighting zone but far behind the lines, were called on to supply the timber needed for trench construction, for crossties, poles for new telephone and telegraph lines, planks and logs for repairing roads, firewood for fuel and so on through a long list, importation of timber being cut to a minimum.

timber, the balance being covered with middle-aged and young growth.

The total actual amount of wood materials grown in France annually aggregated before the war about nine hundred million cubic feet, and approximately this amount was utilized each year. Of this amount, however, only about eighty million cubic feet was in the form of material for lumber, the balance being used for railroad cross-ties, poles, mine props, fuel and by-products. While France has been well off in the smaller forest materials, she has had a deficit in lumber production amounting to eighty million cubic feet, or almost exactly the amount she produces from her own forests. This amount of lumber she had to import.

center of a thriving turpentine and lumber industry.

A second large center of timber production is in the eastern mountains; the Vosges with an area of some two hundred thousand acres, and the Jura with probably an equal aggregate area. Here the forests are composed of the admirable silver fir, mixed with spruce, beech and pine. The silver fir is a real lumber tree, carrying when ripe one thousand to fifteen hundred board feet. Not uncommonly it reaches a height of one hundred and thirty, and rarely one hundred and fifty feet. It rivals in size our own eastern white pine. Scattered throughout France are excellent woodland tracts of splendid oak and beech, some of the trees one hundred and fifty to two hundred years old. There is also abundant Scots pine that often yields twenty thousand board feet per acre.

Finally, in the high Alps, the Maritime Alps, and the Pyrenees, the slopes are clothed with forests that have been conserved, partly because of their inaccessibility, partly because they are needed to control the flow of the rivers and prevent disastrous erosion and land slips.

The French Government owns about twelve per cent of the forests. Forty-three per cent is owned by communes and public institutions, and the balance is private. The Government, however, exercises control over the communal forests and in a limited measure over the private forests.

The foregoing are briefly the essential facts necessary to appreciate the effect of the war operations in the French forests.

Except within the fighting zone the forests have not actually been stripped off. But the merchantable timber has been and is being cut; and this includes both the mature trees and often a large part of the immature trees which are large enough for use. Where these older trees are mingled with younger trees, the latter are carefully spared and the cutting is merely selective. When the merchantable trees are of an even age in stands or groups, they are often cut clear. Thus, in the

Maritime Pine Belt, the clear cutting system has

been used, followed by natural reproduction and supplemented by sowing and planting. Areas of from ten to fifty acres are the ordinary clearings. These are interspersed with similar areas carrying trees of younger age-classes. In the silver fir forests of the eastern mountains, largely publicly owned, the trees are marked for cutting by the French foresters, and selected in small patches, groups, or by single trees.

Effect on the Forests

The effect on the forest is twofold; first to remove the stock which would otherwise be available in the immediate future, and second, to reduce the actual productive power of the forests. Both will be reflected in serious economic consequences throughout the country. Before the war the cutting was so regulated that the annual cut and annual growth about balanced. There was a stable output that

was sustained and was being increased year after year. Under the pressure of war necessity there was removed not only the interest represented by growth, but a deep cut was made in the forest capital. The income producing power of the forest is correspondingly reduced. How much, varies from forest to forest. In some cases as much as thirty years production has been removed. That is, when normally only trees over 70 years old are cut, now all those over forty years have been taken. In other cases, in state forests, the cutting has been more conservative and only five years production used ahead of time. On an average it will take from ten to twenty years for the forests of France to recover.

Economic Consequences

France will thus be unable for a decade or two to supply from its own forests more than a limited part of the timber needed for reconstruction and for current industrial and domestic uses. Lumber and other wood products must be imported to meet her needs. At first thought it would seem that the effect of the depletion of the timber resources in France would



OUR CHIEF FORESTER

Henry S. Graves, head of the United States Forest Service, who points out the seriousness of France's forest problems, declaring there is the necessity not only of securing wood supplies for reconstruction and for her current industrial and domestic use, but also for rebuilding her forests.

be chiefly manifested in higher prices for raw materials and of finished products made out of wood. That the prices will be high and a burden on the people of France goes without a question, and it is vital to the country that arrangements be made with exporting countries to secure material at the lowest possible prices. But the most serious consequences of the cutting of the French forests is to be found in the effect on the local industries, the loss of employment to peasants and others who depend on the forest and wood-working enterprises for a part of their livelihood, and the economic set-back to hundreds of communities which have been largely built up through the existence of tributary forests. The widespread injury to France can only be appreciated when it is understood how intimately the French forests are related to the everyday life and the well-being of the rural districts.

The forests of France are widely distributed. There are, as already pointed out, several large forest centers, but elsewhere there are woodland tracts which produce each year a steady output for

some lumber and wood-using industries. The lumber industry is not like that in this country, with large operations that usually are more or less temporary in character and last only until the resource is exhausted. The lumber industry in France is composed of many

enterprises, stable and permanent in character, and adapted in size to utilize the material that regularly may be taken from the forests. Compared to American standards individual sawmills and their contributing logging operations are small. The industry, however, has become an essential factor in the community. Labor is local and permanent. Many persons work in the woods and in the mills a part of the time and at other seasons on the farms and in other undertakings. Thus, in many mountain

sections, the woods work is pretty largely carried on by the peasants. The trees are cut at one time of the year and brought to the roads, and later on are hauled out by the peasants when their oxen, horses or mules are not used for farm or other work. So, also, many local people work part time in the sawmills and the concerns that make a great variety of products from the forests.

The official statistics before the war indicated that about 710,000 persons were employed as wood workers, but this did not include many thousands of farmers and peasants who worked part time in the woods and

mills, or participated in the home wood industries. So intimately related to agriculture are the forest industries that the statistics of forest labor cannot wholly be separated from agricultural labor. There are in the Vosges, the Jura, and the Landes many mills manu-



Photograph by Underwood and Underwood

THE SENTINEL OF DEATH

Overlooking a valley in the Champagne region in France where artillery fire of the opposing armies swept the area clean of tree life except for a few scattered trunks. Destruction of these forests means loss of employment to hundreds of thousands of French peasants who depended for their livelihood on forest and wood-working enterprises.

facturing chiefly lumber. Throughout the country also are local industries manufacturing a great variety of articles of wood used in every day life. Among the larger wood-using industries are those manufacturing vehicles and farm implements. Some of these are on a large scale, bringing in material from considerable distances. Others are on a small scale, comparable to the small wagon maker of this country. The manufacture of barrels and casks in France is of great importance, especially to take care of the large annual wine crop. Furniture and cabinet shops are found in nearly all large towns and in many small ones. Some factories manufacture musical instruments, others packing boxes and containers in great variety. Quantities of wood are used also in the manufacture of wooden shoes and wooden soles and heels. Fully 52,000 people have been employed in the wooden shoe industry alone. The building of ships and boats is more localized than the foregoing industries, but consumes each year large amounts of lumber of high grade. The forests furnish material also for the manufacture of paper at certain industrial centers, though a considerable percentage of the total wood pulp used has to be imported.

The industries mentioned in the foregoing paragraphs are those which consume wood material in large quantities and employ the most men who are exclusively wood and forest workers. In addition there are thousands of small woodenware factories and a multitude of home industries that use wood. Great quantities of toys, fans, paper knives, brushes, spoons, handles, spindles, funnels and boxes of various kinds are turned out by the peasant workman all over France. Wood is obtained from the nearby forests and mills, the peasant workers having their own lathes which they use at odd times.

For example, in the wooded regions of the Perche and the Maine (northwestern France) there are all sorts of wood-using industries which are maintained as a result of communal possession of the woods. Near the forest of Perseigne there is a small town, Fresnaye, near Alencon, which is entirely peopled with workers in wood. "There is not one house in this town," Ardouin Dumazet writes, "in which wooden goods would not be manufactured. Some years ago there was little variety in their produce; spoons, salt-boxes, shepherds' boxes, scales, various wooden pieces for weavers, flutes and hautboys, spindles, wooden measures, funnels and

wooden bowls were only made. But Paris wanted to have a thousand things in which wood was combined with iron; mouse-traps, cloak-pegs, spoons for jam, brooms * * *. And now every house has a workshop containing either a turning-lathe, or some machine-tools for working wood, for making lattice-work, and so on * * *. Quite a new industry was born, and the most coquettish things are now manufactured. Owing to this industry the population is happy. The earnings are not very high, but each worker owns his house and garden, and occasionally a bit of field."

The basket trade flourishes in various parts of France. It is an important cottage industry. Thus, in one locality practically every one is a basket maker and all the basket makers belong to a co-operative society. There are no employers; all the pro-

duce is brought once a fortnight to the cooperative stores and there it is sold for the association. About 150 families belong to it, and each owns a house and some vineyards.

One of the striking illustrations of the close dependence of local prosperity to the forest is found in the Pine plains of southwestern France. Here is grown the Maritime Pine that has made France second only to the United



Photograph by Underwood and Underwood

A SKELETON FOREST

Like bare and whitened bones lying by the roadside is this forest in Flanders, devastated by artillery and small-arm fire. Thus wherever the Hun passed, the path is marked by ruin and wreck.

States in the production of turpentine. The turpentine industry of France is essentially a peasants' industry. Not only are there many small properties, but the farmers and their families earn a part of their livelihood by gathering turpentine. Through this auxiliary resource peasants have been able to develop farms that alone would not sustain them. It is in this pine belt that a large number of allied mills operated during the war. Already the people of the region are expressing grave concern over the local economic injury resulting from these operations.

Probably the first effect of the depletion of the forest supplies will be a shifting of many wood-using industries to certain large industrial centers. The necessity for importing raw material will tend to centralization of plants at points convenient for transportation. There will be a tendency to substitute machine-made articles for those made by hand. There will be fewer and larger factories to make wagons, furniture, wooden shoes barrels, boxes and the like. Large numbers of small factories will probably go out of business. Communities thrive because of the presence of these industries will suffer or have to find some substitute for the industry. In some cases farms will probably be abandoned as has been the history in the Landes when forests have been destroyed. The home industries dependent on wood will in many places disappear, perhaps permanently, as the skilled carvers, turners and cabinet makers pass on.

This dislocation of local industry, the upsetting of an established economic equilibrium through the exhaustion of a natural resource will cause embarrassment, even suffering. It may be far-reaching on the industrial and social condition of rural France.

Future Supplies

Where will France now obtain the needed supplies of timber? Before the war France imported lumber from a number of countries. Nearly one-half of it came from Russia, one-fourth from Sweden, one-eighth from the United States, one-tenth from Germany, and relatively small amounts from Austria-Hungary, Belgium, Norway, Switzerland and other countries.

France now needs for current industrial and domestic purposes to import from two to three times the previous amount of importations to cover both the amount of her previous importations and what had been produced from the local forests. In addition she will have to import for several years a large amount of material for

reconstruction, an accurate estimate of which cannot be made at the present time. Large amounts of lumber will also have to be imported by Belgium, Great Britain, Italy and several of the neutral countries whose forest resources have been also drained during the war. Practically all countries whose forest resources are large enough to enable them to make exports of lumber will be called upon to furnish material to France and other countries of western Europe.

The first and most logical sources of supply are the Scandinavian countries and Russia, with the United States and Canada second. Fortunately, northern Russia contains an enormous supply of timber which will be available if developed in the right way. Political conditions in Russia are such that it is impossible to predict to what extent these resources will be available in the near future. There is a large center of manu-

facture at Archangel, with 40 to 50 sawmills, some of which are of large capacity and of modern construction. The problems of transportation of logs to Archangel are peculiarly favorable on account of the streams and rivers which can be driven or rafted. It will be of very great importance to France and other countries of western Europe to have a large lumber industry developed in Russia. The suggestion has already been made that the Allied countries have a joint consideration of their forest and lumber problems. Such action would be very desirable not only to prevent high prices that would result from competition by them in a single field, but to aid the lumber exporting countries plan for the production of the needed materials.

France has not only the problem of securing wood

supplies for reconstruction and for her current industrial and domestic use, but she must rebuild her forests. This will involve in many cases extensive seeding and planting, followed by careful protection and intelligent tending. Oftentimes this will require annual outlays of money with material returns long deferred. The United States in joining France and her Allies in the fighting, required and used large quantities of materials from the French forests. The depletion of these resources in which we have had to participate, under the pressure of war, presents to every American who appreciates the great sacrifices of France in the war a powerful appeal to facilitate the acquisition of materials for reconstruction and also to contribute in some practical way to the rehabilitation of the French forests.



LIEUT. COL. GRAVES IN FRANCE

The Chief Forester of the United States went abroad shortly after this country entered the war to organize the work the American foresters were to do in helping to get out the timber needed for war purposes.

NORTH CAROLINA WOMEN URGE PROTECTION OF BIRDS AND ROADSIDE TREES

THE Conservation Department of the North Carolina Federation of Women's Clubs sent out a broad appeal to the women of the State to co-operate in the observance of Arbor Day, particularly through the schools, to the end that a love of trees, woods and forestry and an understanding of these things shall be instilled into the coming generation. Co-operation in the protection of the Birds is urged and it is stated that "the food destroyed in America by insects and small rodents would feed the

from that community. What more beautiful, living and lasting tribute could we pay to our men "over there" than to keep green and growing trees planted in their honor and bearing their names in the communities from whence they went forth. These might be planted on a "Service Avenue" in the city or county, or a grove or park might be created in this way.

And making a strong and urgent plea for the protection of the roadside trees of the state, a matter pro-



"CALIFORNIA SNOWS"

This beautiful picture took the first prize in the photography contest conducted by the Cleveland Plain Dealer. It was made by Mr. George J. Reichel, of Cleveland, Ohio, in May, 1906, in the wonderful Mariposa Grove of Big Trees of California.

people of Belgium! Birds are the great natural enemies of these pests. The laws of the state and the nation protect insect-eating birds, but many are being shot wantonly and for food. Let us create such a spirit of bird protection in our schools that each child will consider himself an honorary game warden, reporting through his teacher violations of the game laws." And for "Tree Tributes" stating that "last year several clubs planted "Pershing" and "Liberty" oaks. It may appeal to many to plant a tree for every man in the service

posed by State Forester J. S. Holmes, and heartily endorsed by civic associations and commissions.

"Let us plant a tree by the wayside
Plant it with smiles and tears,
A shade for the weary wanderer
A hope for the coming years."

Mrs. Ethel Reed Jasspon, the State Chairman of Conservation, makes the point, especially significant in war time, that in 1910 the roadside fruit trees in the little country of Belgium made a return to the government of two million dollars.



Aries

Bayberrie Candle Lore



By Catharine Cornish



Virgo



Taurus



Libra



Gemini

I. THE BAYBERRIE AND THE ZODIAC

Bayberries burned the first month in the year
Mean twelve months of happiness, health and cheer.
Bayberries burned in month number two
Will bring unexpected pleasures to you.
When Aries, the ram, rules overhead,
A bayberrie candle brings luck to the wed.
When the Sun's in Taurus, in April and May,
Bayberrie candles keep worry away.
When Gemini's ruling up in the skies,
Bayberrie candles aid enterprise.
When the Sun's in Cancer, bayberries green
Pleasant journies and visits mean.
When the Sun's in Leo, a bayberrie light
Will keep your Love's affection bright.
When Virgo's ruling, a bayberrie dip
Will guard 'gainst mishap on sea or ship.
When Libra's ruling in the Fall,
A bayberrie candle means luck for all.
Scorpio's sting will be less strong
When bayberries burn the evening long.
When Sagittarius sheds his rays,
Bayberries candles bring lucky days.
When the Sun's in Capricornus' sign,
It's lucky to let the bayberrie shine.
Aquarius' month should always see
Bayberrie candles burning three.
When the Sun is shining in Pisces the fish,
A bayberrie candle will bring your wish.



Scorpio

II. THE BAYBERRIE AND THE NUMBER SEVEN

One bayberrie candle stands for wealth,
Two bayberrie candles token health.
Three bayberrie candles equal fame,
Strength is hid in the fourth's gold flame.
Five bayberrie candles stand for strength.
Six bayberrie candles show life length.
Seven bayberrie candles symbolize
Love that never, never dies.

III. THE BAYBERRIE AND CHRISTMAS EVE

The Christmas Eve that's lighted by
A candle made of bay,
Is one whose joy and blessedness
Will never fade away.

IV. A BAYBERRIE SEED IN ONE'S PURSE

If a bayberrie seed in your purse you tuck,
You'll always have plenty of money and luck.

THE BAYBERRIE AND HOSPITALITY

A bayberrie candle for every guest
Shows hospitality the best.
Greet your friends on Christmas night
With bayberries shedding welcome bright.



Cancer



Sagittarius



Leo



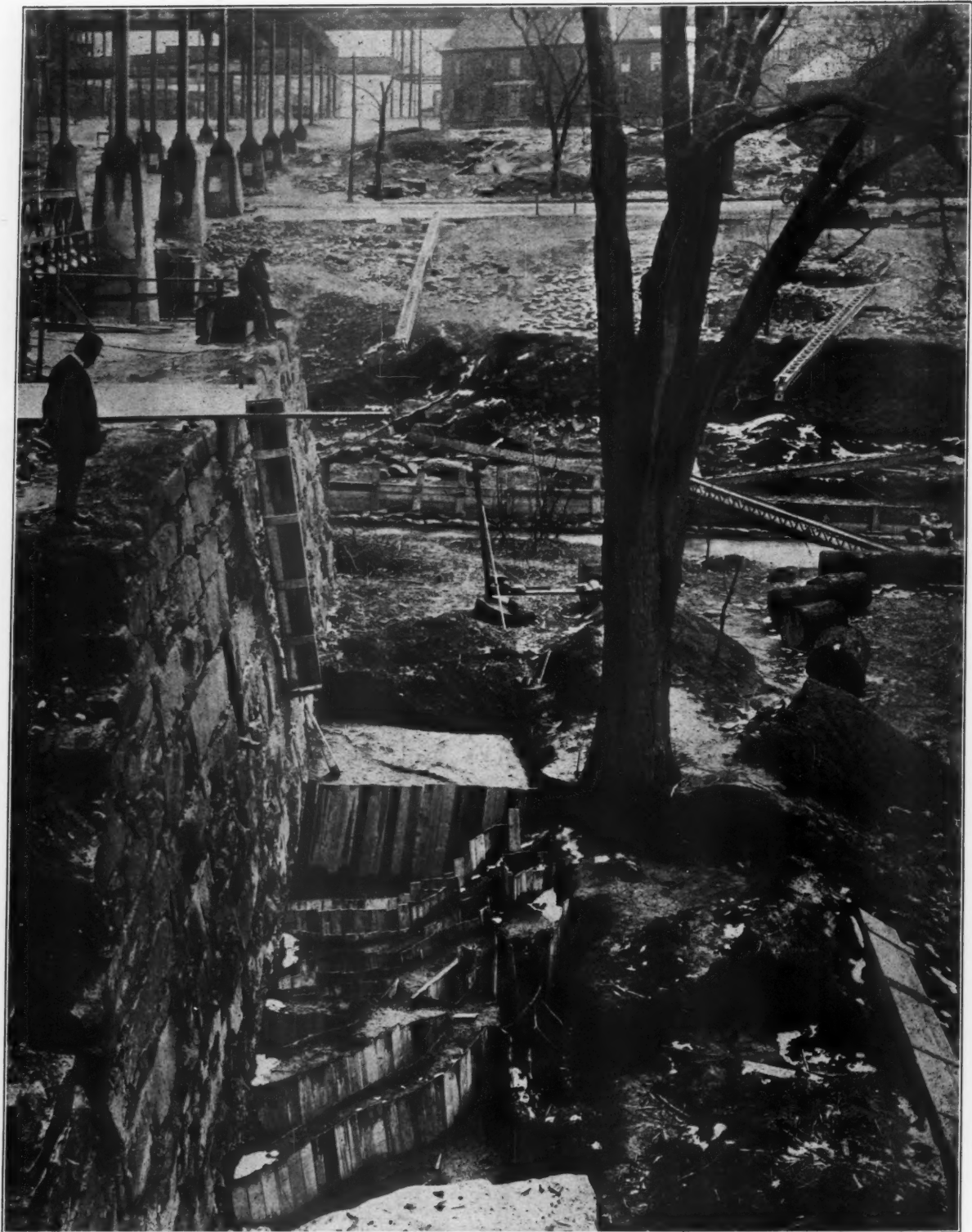
Pisces



Aquarius



Capricornus



WHILE THE WORK WAS UNDER WAY

The Parkway Commission of the Borough of the Bronx is to be highly commended for the particular care it exercises to protect trees to the fullest possible extent. This photograph shows clearly the method employed to protect the roots of a beautiful old elm.

SAVING AN OLD ELM

THE accompanying illustration shows a method recently employed by the Bronx Parkway Commission to save from destruction a large elm tree which stands just inside the boundary line of the parkway reservation.

The thoroughfare to the left of the picture is Gun Hill Road where it crosses the Bronx River, in the Borough of the Bronx, New York City. In connection with the raising and widening of this road it was necessary to build a large retaining wall, the base of which is shown in the middle foreground. Many of the main roots of the large elm tree in the picture lay directly across the foundation excavation for the new wall. To have severed these roots would have meant the death of the tree.

The Parkway Commission naturally follows a policy of saving trees wherever possible, and it was recognized that this particular tree would be especially valuable for screening the proposed retaining wall and an elevated structure. The saving of it in-

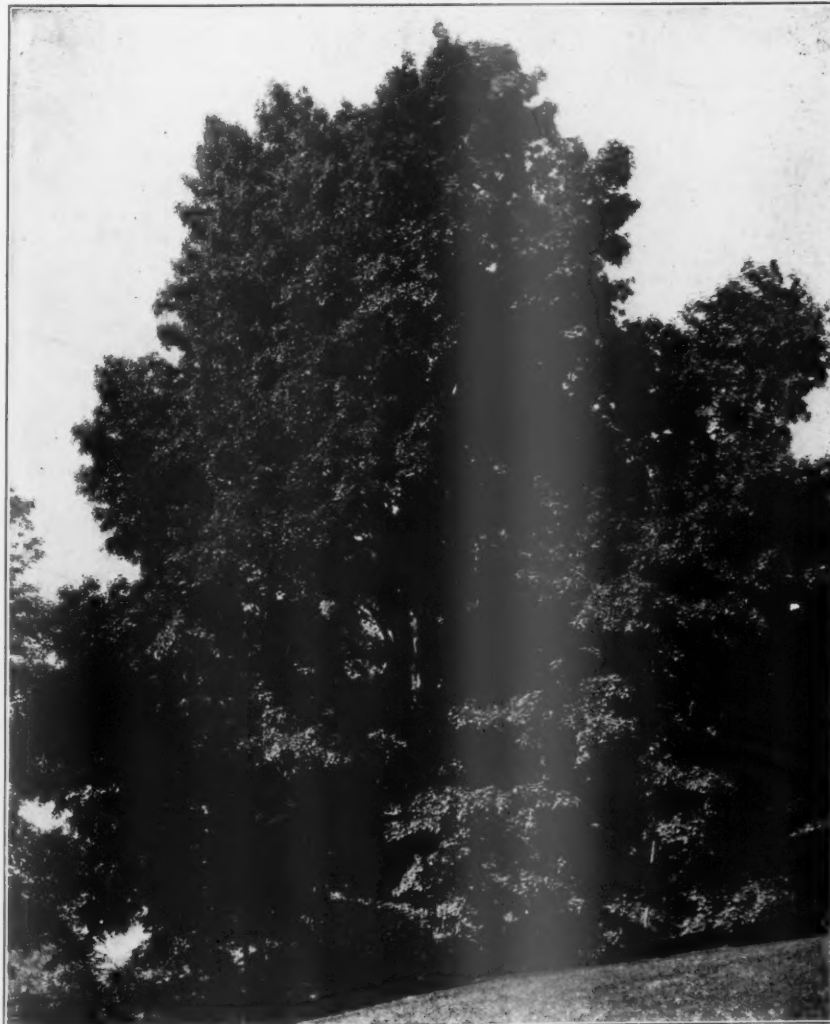
involved the problem of providing adequate foundation support for a heavy wall having a base 12 feet wide, and at the same time providing adequate spaces to prevent pressure or constriction of the tree roots.

When the foundation excavation was approaching the tree, care was taken to remove the earth carefully and with minimum possible injury to the roots. Some of this work had to be done with trowels. As the roots

became exposed they were firmly wrapped with a jacket of straw and kept moist. Thin wooden sheeting was driven vertically so as to completely enclose the main roots in channels or compartments. Adjacent smaller roots were deflected without injury, to make them also occupy these channels, the idea being to divide the available space equally between tree roots and wall supporting piers. The channels were then filled with soil well tamped and compacted. Concrete was placed in all

of the foundation spaces not occupied by the root channels. Above the channels old steel rails were laid in the concrete, thus forming a heavily reinforced slab, supported by irregular shaped piers outside of the root channels. These channels are, of course, open on the bottom and give the roots perfectly free access to ground water, and as the channels pass entirely through the wall there is free access to good soil beyond the wall.

On this foundation which bridges over, and relieves the tree roots of pressure, a heavy, dry wall about 30 feet



Courtesy the Davey Tree Expert Company

A MAGNIFICENT BLACK MAPLE

It is almost impossible to compute the value of such a tree for far and above its commercial valuation lies its esthetic contribution to the joy and pride of its owner, varying with the individual in every case.

high has been built. The work was done early in the spring, and the appearance of the tree in late summer indicates that it has not suffered. It is a large old elm and well worth the effort made to save it. The method used was devised by Mr. Hermann W. Merkel, Consulting Landscape Architect and Forester of the Bronx Parkway Commission.

TREE VALUES

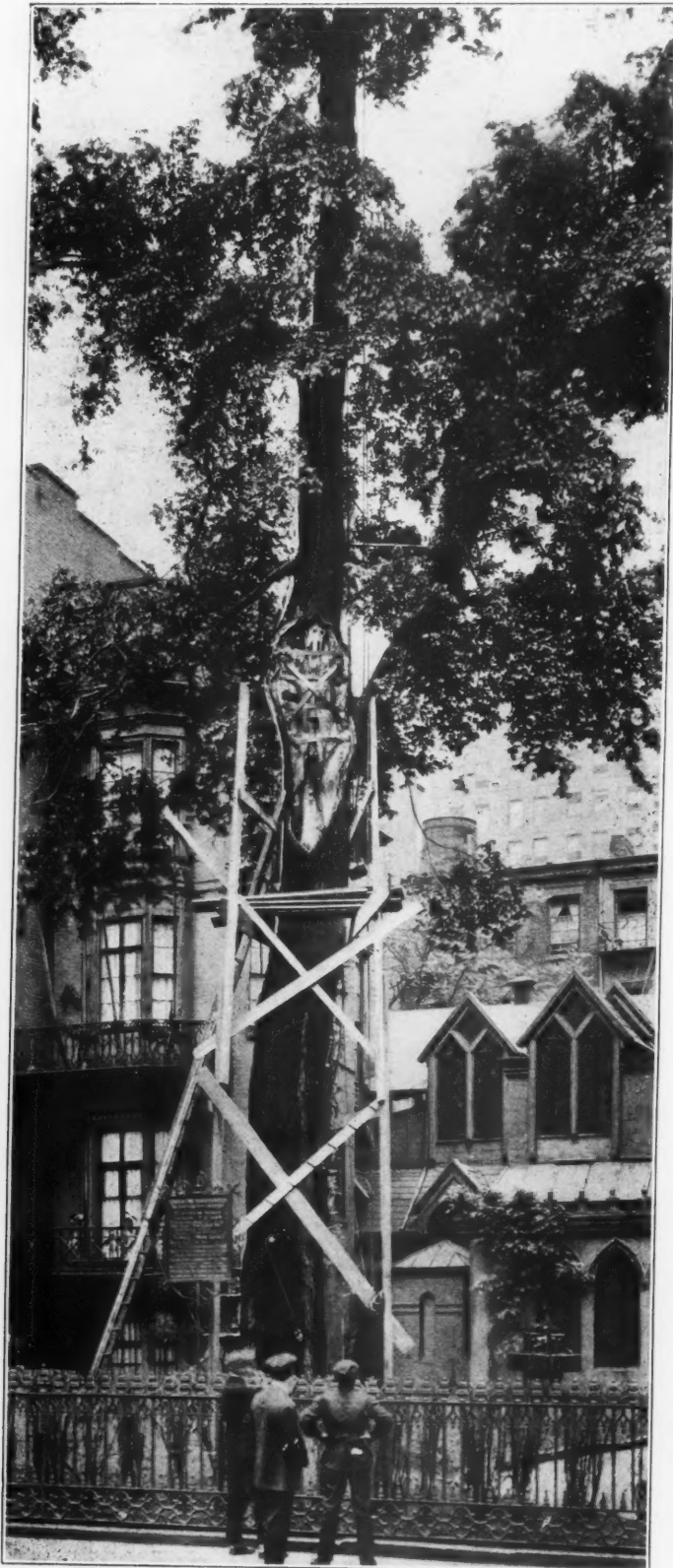
BY ALBERT F. W. VICK

TREES are like human beings in many ways, they occupy the same relative position in their particular spheres; one is the greatest of plants, the other the greatest of animals, and their worth-whileness is reckoned in much the same way as we calculate a man's momentary value.

The big contractor or manufacturer who employs thousands and thousands of laborers, if asked how much men are worth will immediately quote you the maximum price being paid to day workers. Just one man is not worth much when there are millions of other men who can fill his place on a moment's notice. This is exactly the situation of our forest trees. Go to the forester whose life work is the raising of timber for market, or to the lumberman whose business it is to sell the saw-mills' output, and they will give you accurately the correct commercial values of the raw and finished products, at best a pitifully small amount per tree, for a single tree is not worth much when there are millions of others already leaning to the woodman's ax.

Ask the man who hires only skilled workmen or expert mechanics what his men are worth and you will find that because of their special merit these men are receiving four or five times as much as common laborers. Talk with the intelligent farmer of today and you will see that while he may be fortunate in the possession of many trees, he estimates the production of none of them in timber terms. From his maples he receives syrup and sugar; his fruit and nut trees return a substantial profit; his groves of catalpa and oak give him not only fence posts and firewood but leaf-mould, an almost priceless fertilizer; and he knows that for his own comfort and the well being of his cattle, shade around his house and at the proper places in the pastures is of much importance. To him each tree has a definite value far in excess of the lumber it might yield.

There is no cut and dried salary limit for the men of creative ability, for whether they pursue art or business they are priceless, because upon these men development itself is dependent. It is the same with the important trees about a home, in a park, or on a private estate. They are the fundamental reasons for the investment of all the money which has been or will be expended upon the property, and upon their size, shape and variety development of that property must depend if the most ideal and picturesque results are obtained. Not long ago I asked a well known landscape architect, who had charge of



Photograph by courtesy of the New York Sun

WHILE THE WORK WAS BEING DONE

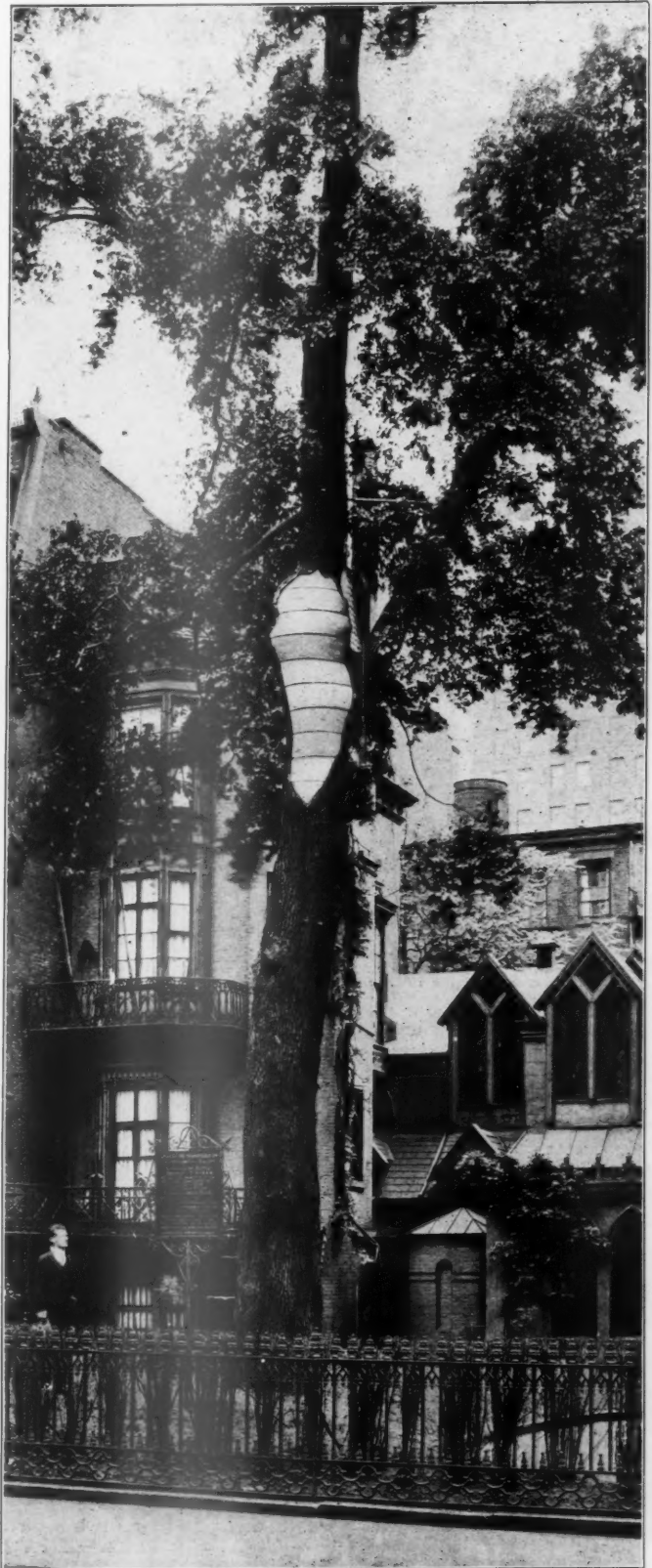
This shows the famous old elm in the yard of the "Little Church Around the Corner" in New York City with the scaffolding erected for treatment.

laying out one of the most famous estates in America, how much a certain tree was worth. "Worth!" he said, looking at me in astonishment, "it is worth the whole place, for it is creative of beauty, and around that tree I build everything."

Improper advice from irresponsible parties, who for their own benefit, often recommend large expenditures of money on trees, which are hopelessly gone or relatively unimportant, has been the excuse for many a man saying, "None of my trees are worth much to me. What do I care if one or two die, I have lots of other trees." This is an erroneous idea and likely to be as costly an error as the mistake made by the man who thinks he does not need trees about his home at all and builds himself a palace in a barren spot, only to find that after all his money has brought him little more than an Arab's tent set in a desert waste, so that finally he has to rely entirely upon the skill of the tree-mover to supply him with trees of barely sufficient size to hide the nakedness of his dwelling. A man should know his own trees and should learn from careful surveys of the situation just which trees could be easily replaced and which trees are priceless to him. Then certainly, as far as these priceless ones are concerned, expert attention when necessary and continuous care is the most logical and economical program for him to follow. I do not believe that there is ever an excuse for dehorning shade trees. If a tree is not wanted it should be removed and a more desirable variety planted in its place. Whatever is done to trees should be done right or not at all. How far a man should go along the line of tree preservation should be as easy for him to determine as to whom among his employes a raise will be given next pay day, and who among his partners or business associates are the indispensable backbone of every movement for the further development of his own best interests. To know trees well, only an intimate study of the trees themselves is necessary, and to study trees carefully is to love them.

For years an old English elm, *ulmus capestris*, has shaded the little church yard and added to the picturesque beauty of the "Little Church Around the Corner," so known throughout America, says the *New York Sun*. It is on Twenty-ninth Street near Fifth Avenue.

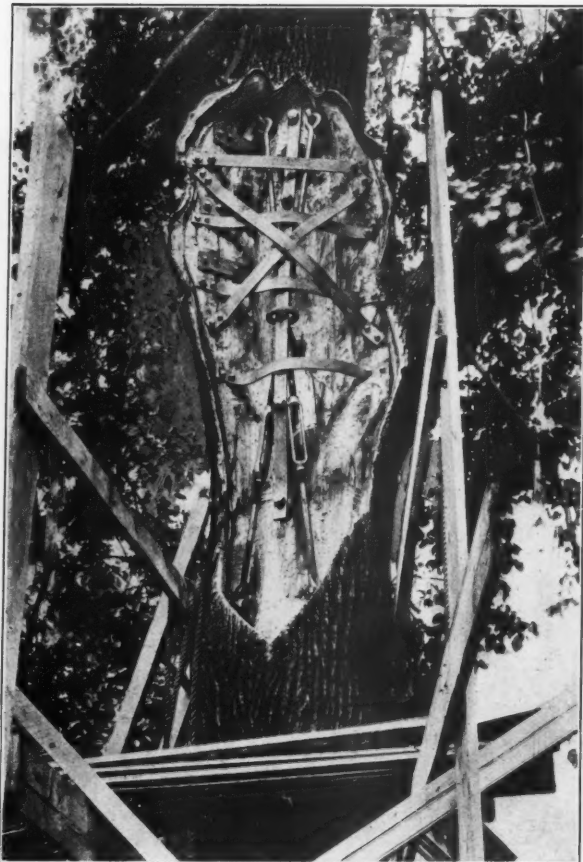
The English elm, as well as our American elm, is subject to splitting crotches. There are two distinct types of crotches, one somewhat resembling the form of the thumb as it is attached to the hand, a strong, durable fork. The other resembles the fingers stretching from the hand, which are most certain to split, permitting dirt to enter at the top of the crack producing decay. Once started the decayed wood



Photograph by courtesy of the New York Sun

AND AFTER IT WAS FINISHED

When the work was completed and the scaffolding removed. In the course of time the wound will be almost entirely covered with bark.



Photographs by courtesy of the Davey Tree Expert Company

BEFORE AND

This is a close-up view of the wound in the big old elm in the yard of the "Little Church Around the Corner" in New York, after the decayed wood was removed and the interior disinfected and braced.

holds moisture and the decay spreads until the branch finally falls and is torn from the tree. This is exactly what happened to the old elm in the yard of the Little Church Around the Corner.

The tree extends to a great height above the broken crotch and was in danger of blowing over, causing loss of life and damage to property, and the question was what to do. Every one admitted that the tree added greatly to the appearance of the place and that it would be unfortunate if it had to be cut down. Tree experts were called. A scaffolding of light material was quickly erected for the workmen to stand on. All the decayed



AFTER

And this is the finished work of the tree experts—a fine, clean job, done in the most approved manner—which resulted in saving for many years to come the famous old elm.

wood was removed, leaving only the sound wood exposed. The interior of the cavity was disinfected, preventing further decay.

The tree was then thoroughly and substantially braced with steel straps to prevent its blowing over in any direction. The cavity was then filled with layers of concrete, so placed that the natural swaying motion of the tree would not be interrupted, without breaking the cement. The cement was laid in a manner to keep out all moisture which might cause decay. In time the cement will be entirely covered with bark, entirely healed, and the tree saved.

FREAK LIGHTNING FATAL TO SHEEP

LIGHTNING recently struck into a band of about 1,250 old sheep on the Wasatch Forest killing 504 head outright. About 400 head were yearlings and two-year-old ewes. The lightning was forked and made two

streaks of dead sheep across the bed ground, leaving a space in the center where no sheep were killed. The loss is estimated to be about \$10,000. The herders who were sleeping about 200 feet away escaped unscratched.

The "Roster of American Foresters in Military Service" which has been published regularly in **AMERICAN FORESTRY** during the period of the war, has been reprinted in its final form, with corrections and changes received up to November 30th, and copies of this reprint will be sent on request.

HOW FORESTRY AND TREE CULTURE CONCERN THE DISABLED SOLDIER

BY W. M. HUSSIE

OF THE RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN,
311 FOURTH AVENUE, NEW YORK CITY.

AS the world has been thrown into war, so it has been forced to undertake the serious consideration of one of the most important by-products of war, the rehabilitation of the disabled fighting man. There is not a trade, an occupation or an industry that has not engaged the serious attention of the experts who, in all the combatant nations, are engaged in the constructive work of fitting for civil life the men whose physical powers have been impaired by their period of service with the colors.

According to the vocational rehabilitation act recently enacted by Congress those disabled in the military and naval forces of the United States have been placed under the joint authority of the Surgeon-General of the Army and the Federal Board for vocational education. The Surgeon-General has jurisdiction from the time the person is injured until

he is restored to good physical condition, when he receives his honorable discharge from the service. The Federal Board then offers him vocational re-education and training

which will enable him to return to useful active employment, and the U. S. Employment Service will find him a job.

It is high time we Americans make an examination of the possibilities of educating certain of our war disabled men to bear their part in the actual work of afforestation, which we shall have to come to, it appears, if we are to provide for the requirements of the future. If such a course lends new impetus to a forest conservation program, so much the better all around.

Other countries have sensed the pressing need of conservation of timber, and are trying to link up re-educational processes with future government activity in that field.

The connection between forestry



THE WONDER OF HUMAN RECONSTRUCTION

This remarkable photograph, furnished American Forestry by the Red Cross Institute for Crippled and Disabled Men, shows a "mutilé" with double fore-arm amputation, working in the field and handling a spade with dexterity, using a single hook on the right arm and a ring hook on the left.

and the soldier seems to have been perceived in England and Australia. Hon. Col. W. Fitzpatrick, C. M. G., of Australia, struck by the alarming condition of affairs in the United States caused by the wholesale destruction of timber, has pointed out in a report on conditions in Australia, that the same disastrous condition must be inevitable there, unless the lesson taught by American recklessness in stripping our timber acreage without replenishment, for mines, railroads, and what not, be learned. He is an authority who places himself flatly on record of uniting the required program of afforestation in Australia with the re-education of disabled soldiers, an authority whose word should have considerable weight. From Australia's investigation in this field we should receive valuable hints for use in our own work of rehabilitation. For, in truth, our forests need rehabilitating quite as much as our permanently disabled soldiers. It may be that the twin objectives will be reached together.

Australia, despite the protests of experts, has muddled into a deplorable condition, in respect of its wood-bearing acreage. In this is seen an opportunity for the returned soldier. Australia's denuded forest acreage provides a great source of remunerative employment for thousands of properly educated Australian disabled soldiers. Along the coast of New South Wales, Victoria, South Australia and Tasmania there are nearly 2,000,000 acres of waste Crown lands now unproductive, a waiting hand of the forester and tree planter. In Victoria alone there are 300,000 acres of such land, stretching from the mouth of the Glenelg River, near the South Australian border, and extending eastward through the Portland, Port Campbell,

Otway, South Gippsland and East Gippsland districts.

These lands, lying behind the sea dunes, consist of long wide tracts of gently undulating country, the surface composed of pure sand, or sandy loam, and covered with rough vegetation, such as heather, and at intervals ragged belts of low scrubby timber.

Much of it, however, is treeless, and the first cost of preparing the ground would be light, concerned with fencing and burning off the heath.

These coastal lands also have the advantage of an ample rainfall, from 30 to 45 inches annually, and have the coolness which is essential to the growth of conifers. Owing to the mildness of the Australian winters, furthermore, there is but a short period of rest in tree growth, and pines and firs which are native to North America mature and yield timber in that climate in three-fourths of the time required for harvesting the timber crop on their original habitat. The cost of planting those lands, including enclosure, preparation of surface, raising of tree plants and planting it is estimated to be only about five pounds per acre. Including all charges of upkeep and maintenance and allowing compound in-

terest at 5 per cent per year the total cost throughout the growth period is estimated at but 17 to 20 pounds per acre.

Thinnings are obtained from the 16th year onwards, and the final crop is harvested from the 25th to the 30th year according to the stem girth and size of the trees.

The actual net yield obtained in Victoria from medium class pine ranged from 100 to 120 pounds an acre. The work connected with this cultivation is, in that climate, pleasant and healthful, an additional source of benefit to the re-educated soldier.

In the same State of Victoria, a good illustration of conditions in the others, the utilization of the poor coastal lands described would easily provide employment for 2,000 men all the year round (for a large acreage must be prepared each year in advance). An additional 1,000 men would be required during the three months of the planting season, and at least the same number

could be usefully employed throughout the year in the improvement of the young natural forests.

Such force could, under skilled guidance, quickly transform the barren wastes described, planting them with useful trees at the rate of 20,000 acres yearly, and repeating, in a smaller way, what Napoleon did to the enormous barrens of the Gironde region in western France, now one of the most productive regions of that rich country.

Thus Col. Fitzpatrick outlines the possibilities for the returned Anzac who may be turned into civil life as a forester. While far off Australia points to the practical possibilities afforded by the field of arboriculture, the French have been busy applying their inventive genius to the provision of appliances rendering pos-

sible the employment of a maimed re-educated soldier in tree culture.

Wonderful progress has been achieved. It has become a matter of delicacy to hint that a man, however badly impaired, is useless in out of door employment.

Arboriculture, viticulture and horticulture have engaged the minds of the French re-educationalists with such success that thousands of disabled soldiers have found their way back to usefulness in those lines of endeavor, despite even the loss of an arm. It is not that they are tolerated, that charity permits them to engage in such pursuits, but that they have proved their ability to hold their own, day after day, and to do efficient work, and receive full wages for the work done. Science, inspired by the appealing necessity of the case, and moved by patriotism and love of country has accomplished marvelous things for those maimed men.

Arboriculture is considered generally desirable from the necessities of all French re-educational work in the agricultural institutions for disabled and mutilated soldiers.

The pruning of trees is easily accomplished by a man

THE FORESTS OF FRANCE

(Rondeau)

By Henry L. Sweinhart

The Forests of France with beauteous grace,
From sun-kissed mountain's top to base,
Waved in the winds of Heaven free
And birds sang in their ecstasy
Among this soft, rich, branch-made lace,

Until the hordes of Hunnish race,
Mad in their vengeance to efface
All sacred things, tore ravishly
The Forests of France.

Brave stood, brave fell these trees, strong place
In battle held. Come, Freeman, trace
Your joy of new-won Liberty,
Your regained Freedom of the Sea,
From this great gift, and help replace
The Forests of France.

with only one hand, the hand which holds the pruning scissors. Grafting, on the contrary, requires the simultaneous use of one hand to hold the grafting knife, and the other, possessing at least the thumb and one or two fingers, in order to grasp the stalk. Nevertheless re-educated French *mutiles* are successfully doing their work, even though deprived of one arm. Doctor Boureau has devised an artificial work arm (*le Viticulteur*) which enables a soldier, with an upper arm amputation to hold a stalk perfectly, while operating a knife with the good hand. In all such cases the artificial arm and hand is trained to do the work of a normal man's left arm, the sound arm and hand being trained as the right one. With other clever work arms a man can handle with ease the heaviest ax or spade, and other implements. There are a score of effective workarms. These scattered references

sufficiently indicate the possibilities in this field for the carefully trained disabled soldier. The possibilities of the work having been pointed out by the Allies, a new impetus to organized effort simultaneously to put our own factory conditions and some of our disabled soldiers on a sound and healthy basis may ensue. Men who decline to engage in general agricultural pursuits may be quite willing to become occupied with problems of forestry. In our practical program of re-education the possibilities of this sphere should by no means be overlooked.

An American re-education program combining such training, with widening opportunities for its application, such as are proposed by Australia, should help in extending the work of national conservation, thus proving of tremendous value not only to our returned disabled soldiers but to the nation.

THE CHRISTMAS ROLL CALL OF THE RED CROSS---JOIN NOW!

THOUSANDS of square miles in France have been utterly denuded of trees, for the Germans in their incursions of hate, destroyed every living thing, especially when forced to retreat from the territory they had conquered in their first rush and subsequent drives. Then too, the war demanded every foot of lumber

available—for bridges, for buildings—for all the needs of the war god. In consequence, France now faces a serious condition, with one-quarter of her trees gone, with many of her orchards non-existent.

After a careful survey of the French nurseries those interested have found available 925,270 fruit trees, located in 125 nurseries. In order to concentrate resources and to make them available in all parts of France, it is proposed to establish a central nursery where trees

from other nurseries will be stored. This central depot will be located at Noisy-le-Roi (Seine et Oise) in the beautiful 12-acre section close to the main line of the Grand Ceinture (Grand Belt Line) railroad. Local nurseries will also be established at various points.

Thus France will follow the example of Germany which planted 20,000,000 fruit trees in 1915.

The planting of 2,000,000 trees will cost about eight million francs. The Government has already placed at the disposal of the minister of the liberated districts 300,000,000 francs, but this money will be used to purchase trees for devastated districts only. Advances will be reimbursed by reductions made upon payment of

war damages. The Touring Club of France and other friends have given support to the movement. The American Red Cross not only gave \$10,000, but aided in the actual labor of reconstruction in the devastated districts.

All through France, the Red Cross has helped to the fullest extent of its great resources. When the year is done, it will have expended more than \$71,000,000 in France and \$20,000,000 in Italy. To continue its work for humanity,

the Red Cross must have the united support of the American people. With this end in view, it will hold the second annual Christmas Roll Call during the week of December 16 to 23. It is hoped and perhaps expected that last year's record of 22,000,000 adults and 8,000,000 children who affixed their signatures to the Red Cross roster will be broken.



THE RED CROSS GAVE THEM INFINITE SUCCOR—HELP THE RED CROSS NOW

Just as long as war is fought from holes in the earth instead of in the open there will be an ever increasing use of trees and cut lumber for trenches and dugout construction. Rough work and little glory for many who went forth gladly to offer the highest sacrifice. Lend strength to the arm of the merciful organization which bind their wounds—the American Red Cross.

MEMORIAL TREES FOR

THE American Forestry Association has suggested that Memorial Trees be planted in honor of the sailors and soldiers who gave their lives in the great war and the idea is sweeping the country and receiving the indorsement of governors, forestry and other state officials and various organizations. Many newspapers are commenting editorially upon the plan. Members of the American Forestry Association can do a great work if each will write to his newspaper urging that the American Forestry Association's plan for memorial trees be carefully considered in adopting local plans. Each member will help the association if he will forward to the secretary marked copies of newspapers carrying articles on memorial trees or editorial comment. Then start a campaign in your own community, get a resolution before your city officials and report progress to the secretary. The Lincoln Highway Association has indorsed the plan for tree planting along that motor route. Other suggestions include county tree planting and others for trees as the proper setting for any memorial that may be adopted. Here follow excerpts from letters the association has received:

WILLIAM HOWARD TAFT—One fitting and appropriate memorial to our soldier dead would be rows of fine trees planted along the great through highways of the various states. They will stand there for many generations to come and keep fresh in the minds of all passers-by the heroic deeds of those young Americans who gave their lives that freedom and justice and truth might not perish from the earth. I most heartily commend the plan.

ARTHUR CAPPER, Governor of Kansas.—I am most heartily in accord with the idea. It is most appropriate, I feel, that we should have living trees as memorials for our soldier dead whose deeds will live for all time.

C. R. PETTIS, Superintendent, State Forests, New York—We must hold dear the memory of those who gave their lives for our country. Monuments of granite and bronze will be raised in their memory but we should consider living memorials that may be useful.

T. GILBERT PEARSON, National Association of Audubon Societies—The planting of trees means more to bird life than can be estimated. The Audubon Societies most heartily indorse the plan.

MISS E. F. WHITE, Agricultural College—I note with pleasure your campaign urging the planting of memorial trees throughout the country in honor of the soldier and sailor dead and we stand in readiness to be of service.

JOHN H. WALLACE, JR., Commissioner, Alabama—The patriotic citizens planting trees will reap a rich harvest in perpetuating the sacred memory of the manhood which achieved the glorious victory.

ROBERT S. CONKLIN, Commissioner of Forestry, Pa.—We feel there is no more beautiful method of commemorating the deeds of heroism

of our soldiers and sailors in the great war than by erecting to their memory a memorial which will remain green and flourishing for years.

J. B. MOWRY, Commissioner of Forestry, R. I.—I am, to be sure, glad to co-operate in any way that may be desirable as I think the plan is a very good one.

M. B. PLATT, Deputy State Forester, Cal.—I believe that now is the time to urge that these public parks be made lasting memorials to the young men who so gallantly acted in the defense of our country.

FRANK WILLIAM RANE, State Forester, Mass.—The idea is an excellent one. Surely

do not stop with a single tree or small groups—why not have memorial forests.

FREDERICK G. GARDNER, Governor of Mo.—The planting of Victory Trees is a fitting means of perpetuating the memory of our gallant men who gave their lives that we and the nations of Europe might enjoy the blessings of freedom and liberty.

F. W. BESLEY, State Forester, Md.—I should like to see, not only individual trees planted in honor of those who have given their lives to the liberty of the world, but I would like also to see avenues of trees planted along some of our important highways.

H. M. DORSEY, Governor, Ga.—I am very much in favor of the plan outlined in the communication.

JAMES WITHYCOMBE, Governor, Oregon—I assure you that I am heartily in sympathy with this movement.

SIMON BAMBERGER, Governor, Utah—On the whole I am very much in favor of such a plan as you have outlined.

GEORGE COUPLAND, Vice-Chairman, Neb. State Council of Defense—The Council of Defense is heartily in favor of doing as you suggest in the matter of memorial trees.

SAMUEL W. McCALL, Governor of Mass.—I think your suggestion of planting memorial trees in honor of our soldiers who died in the great war an excellent one.

RICHARD LIEBER, Indiana Board of Forestry—Governor Goodrich is very much in favor of planting memorial trees. He suggests that it might be possible to gain the co-operation of each county in setting aside a well selected plot for the purpose of maintaining a county memorial park.

GEORGE F. KUNZ, President, American Scenic and Historic Preservation Society—The plan of the American Forestry Association to plant memorial trees for the nation's dead sailors and soldiers I believe an admirable one.

TOM C. RYE, Governor of Tenn.—I shall be glad to co-operate with the American Forestry Association for getting memorial trees planted.

J. E. BARTON, Commissioner of Forestry, Ky.—I am heartily in favor of the plan which you suggest for the planting of memorial trees in commemoration of our soldier dead.

FRANK O. LOWDEN, Governor of Ill.—I am heartily in sympathy to the general idea.

FORREST H. COLBY, Forest Commissioner, Maine—I believe the plan of planting of memorial trees for our soldier dead is a splendid one.

J. A. A. BURNQUIST, Governor of Minn.—Your proposal meets with my hearty approval. The beautiful tree is always a fitting memorial.

P. G. PLEASANT, Governor of La.—No more fitting memorial could be paid to our soldier dead and living. We are planning 116,000 Victory Oaks along the 440 mile route of the Jefferson Highway in Louisiana.

Trees

By Joyce Kilmer

Whon Gave His Life
in France

I think that I shall
never see
A poem lovely as a
tree.

A tree whose hungry
mouth is prest
Against the earth's
sweet flowing breast.

A tree that looks at
God all day
And lifts her leafy
arms to pray;

A tree may in summer
wear
A nest of robins in her
hair;

Upon whose bosom
snow has lain;
Who intimately lives
with rain.

Poems are made by
fools like me,
But only God can make
a tree.

FRENCH FORESTS IN THE WAR

THE forests of France have suffered terrific destruction in this war, and the price they have paid and their possible rehabilitation is the subject of an article in *Le Matin*, recently discussed in *The Christian Science Monitor*. The annual consumption of wood in France, in times of peace, amounted in all to 12,000,000 cubic feet, 4,000,000 of which came from other countries.

French soil is so fruitful that forests have been cut down to make room for wheat. The danger became apparent in the Sixteenth Century and protests were raised on the matter by Bernard Palissy. Two centuries later Bremon tier made a forest in Gascony with the object of fixing the sand dunes, and this is the largest forest in France at the present time. The foundation of the school of Nancy in 1824, and three years later the drawing up of the forestry code were factors which made for an increase in the woods of France.

Just before the war, the forests of the state and those belonging to the communes and public institutions amounted to about 3,115,000 hectares which were administered according to the code of 1827; there were, however, 6,000,000 hectares of wooded country in private hands which were subject to no supervision. At this time the afforested area in France amounted to 17 per cent of the whole territory, to 20 per cent in Switzerland, 26 per cent in Germany, 33 per cent in Austria-Hungary, 40 per cent in Russia, 48 per cent in Sweden, and 53 per cent in Scotland and Ireland.

The result of the reassessment of the afforested areas after the war will, the writer thinks, be sufficiently sad. The forest of the Ardennes has suffered badly, that of Artois is destroyed, the fruit trees of the Nord and the Aisne have been torn up; a great part of the beauty and wealth of France ruined by the passage of the barbarians. In other parts matters are bad enough but not so bad. The forest of Argonne has suffered in the north from the battles and in the south from the necessities of the armies. All the woods which border on the front, in Champagne, the Isle-de-France, the Vosges, and elsewhere have had great inroads made upon them, for the front seems to eat up wood which is needed there for all kinds and purposes. In the interior of the country, the same sacrifice has been going on. In other times Germany and Austria sent wood to France, and now, for lack of freightage, neither Scandinavia nor Canada send either deal or wood pulp, and the scarcity of coal leads to the consumption

of wood in the household fires. The vast forests of Burgundy, and the great chestnut woods of Auvergne are being thinned, and the pines are falling in the Jura and Bugey and the Landes, while the cork woods of Province are being cut down.

The high price paid for wood is another factor in bringing about the trees' downfall, and a law has been passed to protect the olive trees of the South as well as the precious mulberry trees. The demand for wood will be even greater in the post-war period, the writer maintains, for then reconstruction will be going on. Fourteen million cubic meters will be needed of which barely 6,000,000 will be supplied by the French forests, and the remainder, if it is bought from other countries at the reasonable price of 200 francs, would require an annual output of a milliard and a half.

In such a situation attention is turned toward the inexhaustible forests of the colonies: Indo-China, Madagascar, Guyane, the ivory coast, and above all Gabon, possesses a vast wealth of trees as beautiful as they are varied. France's colonial possessions can, as a whole, supply her with 50,000,000 hectares of forests. These will be made use of and attention is already being given to the matter. The minister for the colonies is asking for a credit of 40,000,000 francs in order to begin the exploitation of these woods and to export them to France. Therefore, the writer declares, thanks to her colonial brother, the French trees will be able to have a time of rest after the war, during which so much has been asked of her. Help must be given to her, too, to regain her former position.

In France there are 6,000,000 hectares of uncultivated land. The state is slowly re-afforesting those which belong to it and the forest department has transformed entire regions in the mountains, but owing to various causes what is gained in one place is lost in another. Colbert said that France would perish for lack of wood, but he had reckoned without her forester. If Bremon tier planted pines in the shifting sands, they have made black pines, beeches, and oaks grow on the bare granite, and other kinds of trees on the marshes. They have already done much and in the future they will make new conquests, for as the Convention said: "Upon the preservation of the forests depends the success of agriculture, commerce, manufacture, and the arts, the navy, navigation in the interior, all the conveniences of our existence."

THE GIANT "GENERAL GRANT"

A NATIONAL park containing only four square miles, and created to protect only one tree is the General Grant which, except for two small national reservations made for the conservation of curative springs, is the smallest national reservation in the country.

But the General Grant tree is worth a national park all to itself. It is a giant sequoia, and next to one, is the biggest and oldest living tree in the wide world. It is thirty-five feet through from bark to bark, and two

hundred and sixty-four feet high. It is not far from four thousand years old.

The one living thing that is bigger and older is the General Sherman tree in the Sequoia National Park, a few miles to the east. That is a foot and a half thicker and sixteen feet higher.

The General Grant tree is not the only sequoia in the little national park, however. It is the biggest of a pine grove of sequoia trees. Small though the park is, last year, more than 17,000 people visited it.

THE USES OF WOOD

WOODEN FURNITURE AND THE PLACE IT FILLS

BY HU MAXWELL

Editor's Note.—This is the eighth story in a series of important and very valuable articles by Mr. Maxwell on wood and its uses. The series will thoroughly cover the various phases of the subject, from the beginnings in the forest through the processes of logging, lumbering, transportation and milling, considering in detail the whole field of the utilization and manufacture of wood.

MANUFACTURERS seldom design lines of furniture for special occasions, in the same way that milliners make Easter hats, which are in season during a few days, but never again. The buyer of furniture, however, if he is posted, and if he is gifted with taste and judgment, should never be at a loss in selecting suitable things for his own house or for a friend's. The field permits wide choice. Time, place, circumstances, and persons must be taken into account. What might look well in one house would be out of harmony in another. The taste of one person might be pleased with things for which another would have little use. A country home, unsupplied with electricity, would not exactly

fit an electric lamp or an elaborately carved walnut or mahogany pedestal. In that case, would not an old pattern of candlestick, of fine wood and on a pedestal, be more suitable? Or would not a cedar clothes chest be appropriate and more in conformity with the surroundings? The electric lamp might, with perfect harmony and in excellent taste, decorate the home of the city friend.

Take the case of children who are made the recipients of presents. It is pretty hard to induce them to believe that a clawfoot dining table, or a folding bed, or a curved-glass china closet, was really meant for a gift to them, though their names may be on the shipping tags when the expressman delivers the presents. It would be



APPROPRIATE CHRISTMAS GIFTS OF WOOD

This charming picture of an interior contains some good suggestions for Christmas gifts all the way from the fine four-poster bedstead and the practical and comfortable looking chairs, to the small table with the attractive electric lamp made of mahogany and the writing-desk on which stands a handsome mahogany clock and a pleasing, but inexpensive, little camouflage for the telephone—all made of wood.

a pretty dull child that would not see through the sham and know that the present was for the house, with nothing personal about it. It will be different if the present which arrives the day before Christmas is something distinctly for a child, a little rocker, a low writing desk, or a bed only a little larger than the one outgrown. That will appeal because it suits. Children learn at an early age that "consistency is a jewel."

Therein lies the secret of successful giving, and nowhere more than in selecting presents at Christmas, which

fireplaces, a book, and a quiet hour after the day's work was done. Times have not so greatly changed that the spirit which prompted the giving in the old way should not hold yet. Some of the very old stories are always new, and one of them relates to that kind of giving.

Most furniture makers imagine that they must keep their line up to date, yet it is as well to be a little old fashioned in some things, for among the old fashions are some rich in memories.

A discussion of furniture might be based on two wholly



WILLOW AND REED FURNITURE

Most willow rods of which furniture is made have been imported from Europe, though a few holts have been cultivated in this country with good results, and no reason exists why adequate supplies might not be grown here, where there is always a good market for willow furniture.

by common consent the world over is the most appropriate time for making presents. Utility is not barred. A gift is none the less welcome because it is useful. During all changes in patterns and fashions, the same rule has held which was true when our great-grandfathers made presents of andirons, rocking chairs, and brass candlesticks. These suggested evenings at home, with open

different points of view. The subject could be dealt with historically, and that would call for an account of changes in fashions and styles during different periods. Such a treatment would make much of the varying tastes of peoples in certain countries from time to time, as those tastes were expressed in furniture. Or, approaching from the other viewpoint, the furniture industry might

be considered as it now exists in the United States, with no further reference to past years, periods, styles, and fashions than is necessary to illustrate certain features of the subject. Treatment from that angle would deal with materials, statistics, and methods; the resources of rough timber and the same resources transformed into finished products; the forest put to its highest use in the service of the people.

This article is written from the viewpoint of the present rather than of the historical, and it is therefore necessary to deal in statistics sufficiently to show the economic as well as the esthetic side of the subject. It is necessary, also, to eliminate from consideration all furniture

made of materials other than wood; but that does not take much away, because wood is now, and has always been, the leading dependence of furniture makers.

It seems appropriate, however, to devote a few introductory paragraphs to a review of furniture's place in human progress, for it has had a place; and the full value of what we possess cannot be adequately appreciated unless it is compared with



ple; and down to the present time furniture has been a measure of a people's culture in a greater degree, perhaps, than anything else, except books, and the existence of literature presupposes the existence of furniture. The Japanese had writing desks six inches high before they had any other furniture, except skins and rugs to sit on. The Egyptians used doveled, carved, and veneered furniture 5,300 years ago. A bedstead dating from that period is in existence. It is twelve inches high, 26 inches wide, and 63 inches long. If it was made for an adult, his feet must have hung over the footboard; but it would fit a child, and it is known that the Egyptians made furniture for children, for a child's chair, 3,400 years old, still in existence, had a back 23 inches high, a seat seven and a half inches high and 17 inches wide. The back was constructed of panels one-fourth of an inch apart. The old furniture of the Nile was principally of cedar but other woods were used, among them being ebony, while walnut and

teak, believed to have been brought from India, were occasionally used.

The Greeks had faultlessly planned and exquisitely made furniture, but not much of it. Perhaps their



A FAVORITE GIFT

A handsome electric floor lamp would delight almost any woman's heart.

what went before. Wild men never used furniture, and nomads had little. They could not move it about with them in their wanderings. The use of furniture has always indicated a fair degree of civilization in a peo-



AN ARTISTIC COMBINATION

Wood, reed, and upholstery blend well together when skillfully worked into furniture, particularly when the piece of furniture is of large size. Woods may be had in colors to match nearly any surroundings that can be met with, from birds-eye maple and holly, the lightest, to walnut and ebony, the darkest, and all shades between.

cheaper sorts, which were used by the common people, have not been preserved, even in pictures and records. The Greeks employed the lathe in their furniture shops, made folding chairs on the order of modern campstools, and being mathematicians, they liked three-legged tables which would stand firmly on any sort of uneven floor.

The Romans went in for novelties in furniture. Their tables had one, three, or four legs, tops circular, hexagonal, or rectangular, and extremely fine veneers were used by the rich who could afford it. Excavations at Pompeii disappointed those who expected to find large

Queen Anne, George, Chippendale, Sheraton, and Heppelwhite. These all mean much to persons interested in furniture fashions and styles, but they cannot be discussed here.

Furniture represents the fourth largest wood-using industry of the United States, the total annual demand for wood in this line approximating 950,000,000 feet. The industries whose demands exceed that amount are planing mill products, car construction, and box making. Of the woods which supply the furniture factories, slightly more than 17,000,000 feet a year are of foreign origin, leaving more than 98 per cent to be supplied by our own forests. Hardwoods largely predominate over softwoods in the furniture business; and of the domestic stock, softwoods aggregate 57,000,000 feet, hardwoods 870,000,000, or about six and a half per cent for the former to the latter's ninety-three and a half per cent. Practically all that comes from foreign countries is hardwood.

The native hardwoods which contribute to the furniture industry with the annual amount of each are



HEPPELWHITE WOODEN DRESSER

No one can think of this piece of beautiful furniture as being made of anything but wood. Its delicate lines suggest nothing else, whether it is of maple, gum, walnut, cherry, or any one of numerous other excellent furniture woods native of this country or imported from overseas.

quantities of fine furniture made of wood. A few fragments were unearthed, but apparently the volcanic ash which buried the city contained chemicals which decomposed wood and reduced it to brown dust. The few fragments of furniture that were recovered sufficiently intact to be restored, served as models after which much of the Louis XVI furniture was designed seventeen centuries later. A wooden bedstead dug up at Pompeii was four feet wide, one and a half feet high, and seven and a half feet long, had turned legs, and was equipped with wooden pillows; but the pillows were not copied by the Louis XVI furniture makers.

Changes in furniture styles and fashions have been many, ranging through the Italian Renaissance, French Renaissance, Gothic, Elizabethan, Jacobean, Louis XIV, Louis XV, Louis XVI, Charles II, William and Mary,



THE CHINA CLOSET STYLE

Wood and glass form an excellent combination in the china closet where an attractive outward display is wanted, and likewise a pattern of construction that will give a good view of the ceramics and cut glass within. Metal never was in much evidence in this kind of furniture.

listed in the table which immediately follows:

Hardwood	Feet
Oak.....	431,053,283
Red gum.....	102,237,867
Maple.....	87,571,456
Birch.....	54,677,450
Yellow poplar.....	53,374,850
Chestnut.....	44,734,180
Basswood.....	33,146,276
Beech.....	21,163,204
Ash.....	15,668,588
Elm.....	12,154,102
Cottonwood.....	5,188,309
Tupelo.....	2,520,000
Black walnut.....	1,680,957
Sycamore.....	1,474,957
Hickory.....	843,600
Red alder.....	792,500
Cherry.....	622,530
Butternut.....	593,500
Magnolia.....	477,100
Buckeye.....	415,000
Hackberry.....	70,000
Willow.....	40,000
Persimmon.....	35,000
Cucumber.....	16,000
Hornbeam.....	15,000
Osage Orange.....	1,000
Miscellaneous.....	15,650

Total.....870,570,284

The softwoods fill a minor place in the manufacture of furniture. They have two main uses: first, for cheap articles like kitchen tables; and, second, as the inside, unseen portions of high grade



Photograph by courtesy of the Gum Lumber Manufacturers' Association, Memphis, Tennessee.

UNIQUE PATTERNS IN CHAIRS

Novel patterns in chairs afford opportunities to display the beauties of woods to excellent advantage. The chairs in the accompanying cut are of gum. Plain as well as figured material is used. Some chair manufacturers finish gum in imitation of quartered oak, black walnut, and cherry, as well as of the foreign wood, Circassian walnut.



A FIGURED GUM BEDSTEAD

When this wood is exported to Europe it is usually known as satin walnut, and sometimes as hazel pine. The surface finishes so smoothly that it suggests satin, and it also resembles walnut. The tree belongs to the hazel family and its other name is due to that fact. It has two names in this country, red gum and sap gum, the former being the heartwood, the latter the sapwood, but all from the same tree.

Softwood	Feet
Pine.....	30,442,703
Fir.....	11,390,290
Hemlock.....	7,053,446
Cypress.....	3,477,800
Spruce.....	2,270,500
Cedar.....	1,856,100
Redwood.....	355,250
Larch.....	154,000

Total.....57,000,089

A complete list of the foreign woods demanded by the furniture makers of the United States would contain more than fifty species, but many of them are used in quite small amounts and are distributed among numerous shops and factories. Mahogany is by all odds the most important and a number of woods are included under that name which are not true mahoganies. Nevertheless, genuine mahogany exceeds in quantity the aggregate of all other foreign woods in the industry, as the following list shows:

Foreign woods	Feet
Mahogany.....	15,637,125
Lignum-vitae.....	593,663
Circassian walnut.....	452,040
Padouk.....	230,000
Prima vera.....	67,500
Satinwood.....	22,070
Rosewood.....	15,280
Eucalyptus.....	5,500
Ebony.....	5,450
Spanish cedar.....	1,690
Miscellaneous.....	46,580

Total.....17,079,498

Woods listed as mahogany come from countries bordering on the Gulf of Mexico and the Caribbean sea, from Africa, and from the Philippines.

Lignum-vitae is a heavy, hard wood from the West Indies and tropical America.

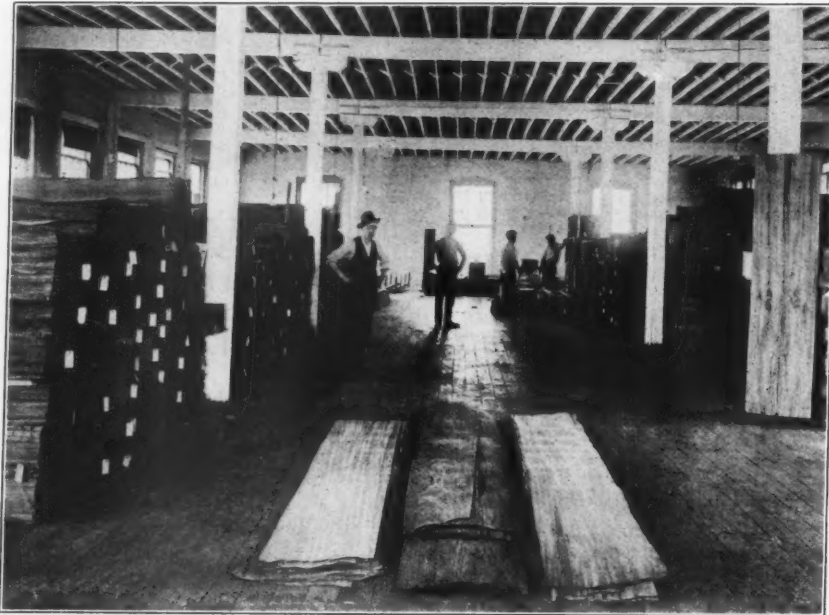
Circassian walnut is brought from Asiatic Turkey, cut principally in old orchards of planted trees. It is botanically the same species as English, French, and Italian walnut, it having been planted in those countries. More than a million Circassian walnut trees, cultivated for their nuts, are growing in California. The European war has interrupted the supply of this wood

and it is now very scarce in the United States. Red gum is a substitute.

Padouk, sometimes known as vermillion, is procured in the Andaman Islands, and is valued for its fine color and its susceptibility to exquisite polish.

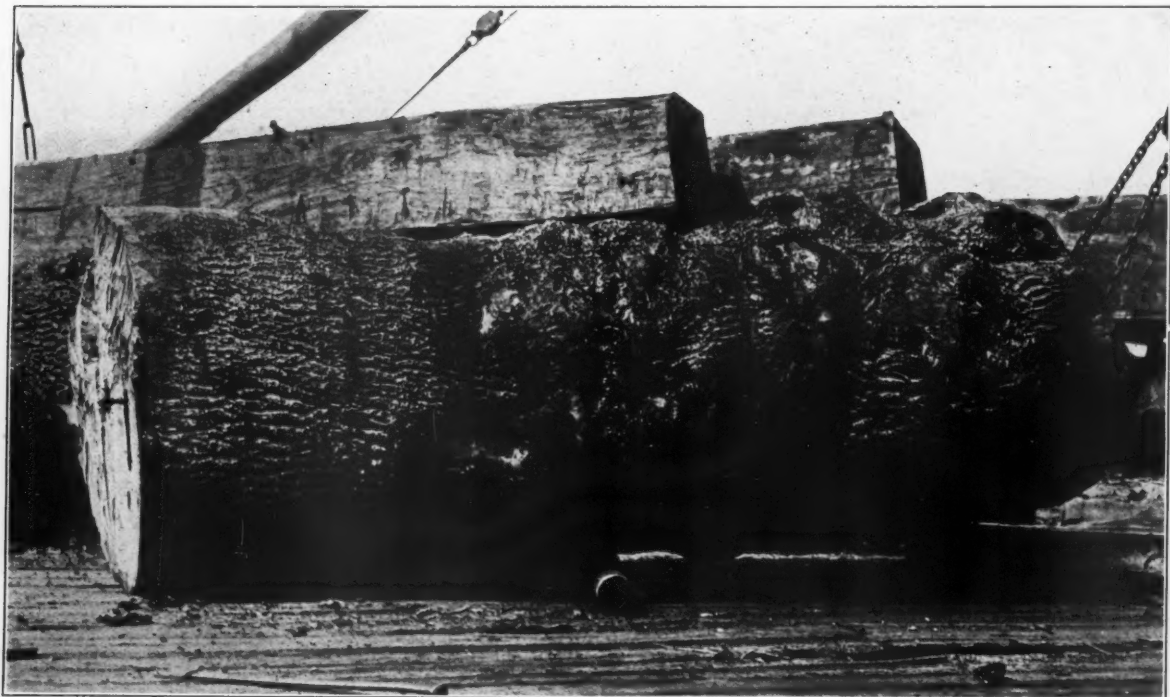
Prima vera, called also white mahogany, is a native of the southern Pacific coast of Mexico and the adjacent parts of Central America. It made its appearance in furniture factories within recent years.

Different species pass as satinwood, but that most used by American furniture makers comes from the West Indies. It is very hard and heavy and in color ranges



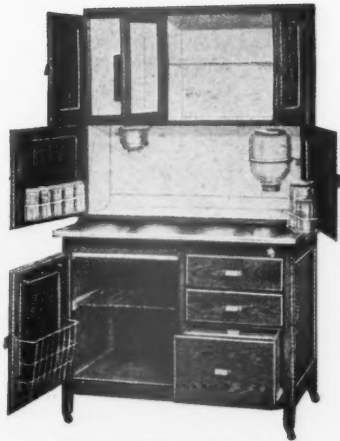
A FURNITURE FACTORY'S VENEER STOCKROOM

Figured veneer must be carefully matched in selecting stock for fine furniture. The figure of no two logs is exactly the same, and it is customary to keep the product of the various logs in separate piles in order to have at hand stock that will match. Consequently it is necessary to keep large stocks on hand.



LOGS OF ENGLISH OAK

These logs present a rough appearance, but they contain high-class and costly stuff. Only small quantities of this oak find their way to the United States. It is a native of England and of the continent of Europe. Its value is measured more by the wood's color than its figure, consequently little emphasis is laid on quarter-sawing such stock.

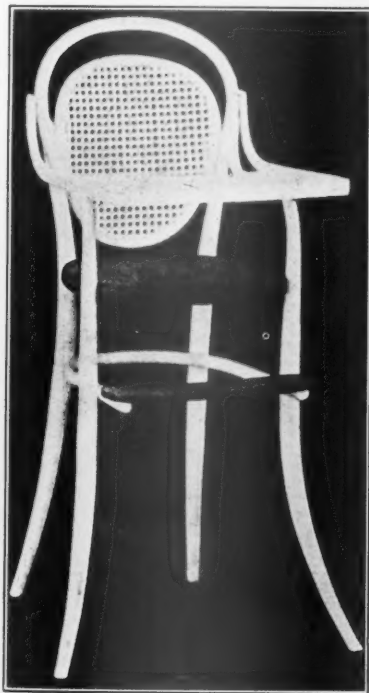


THE KITCHEN CABINET

Kitchen and pantry furniture is frequently made of such softwoods as pine, spruce, cedar, and cypress, though a number of the hardwoods serve equally well where frequent scrubbing is necessary. Among such hardwoods are gum, cottonwood, tupelo, beech, yellow poplar and elm. They are rated as sanitary woods because they have small pores.

due to the wood's odor and not to its color which ranges from black to purplish brown.

Ebony belongs to the same family as persimmon, and there are numerous species in many countries, and the woods are of various colors. The black ebonyes are most popular, and most people suppose that all ebonyes are black. The supplies coming to the United States factories are procured in India, Ceylon, and Madagascar.



THE CHILD'S TABLE CHAIR

Wood is preferred above all other materials for children's chairs. It is not so hard, rigid, heavy, or cold as metal, and it is sanitary, substantial and handsome. It may be finished plain, without paint or varnish, if so desired, or it may be enameled a clean, beautiful white as in the illustration.

from brown to yellow.

Eucalyptus is an Australian wood and there are more than 150 species in that country. One with rich, red color is liked best for furniture. Planted eucalyptus trees flourish in California and Florida.

Rosewood is imported from Brazil principally, but woods of the same name and similar appearance, but of different species, are cut in many countries. The name is

Spanish cedar's name indicates that it is a softwood, but the tree bears broad leaves, and according to the general definition, it is a hardwood. Its home is in the West Indies and Mexico. It is so soft that when used as furniture it must be protected against chafing or it will scratch badly.

Teak is an East India wood, handsome in color, and about as hard and heavy as oak. When freshly cut, it emits an offensive odor, but that is not noticed when the wood has been seasoned.

Among the foreign hardwoods in-

cluded under miscellaneous in the foregoing table are African walnut, hazelwood, English oak, amaranth, Madagascar tulip, Australian plumwood, marblewood, and tonquin.

Oak is king of the domestic furniture woods. In amount used, it nearly equals all other domestic hardwoods combined.

Red gum is second to oak in quantity going into furniture in this country. Probably two hundred species of American hardwoods find places as material for furniture, though no list contains the names of that many. Sta-



BENT-WOOD FURNITURE

Several patterns of chairs, and articles of other kinds, require bent-wood in their construction, and the manufacture of furniture of that class amounts almost to the dignity of a separate industry. The wood is prepared for bending by first being rendered soft and pliable by a bath of hot steam.



WHEN NATURE DOES HER WORK

The finest furniture stuff comes from hardwood forests similar to the one shown above. The hardwoods are the hardwood trees, like walnut, gum, maple, birch, cottonwood, and yellow poplar and more than 400 others in the forests of the United States. The scene represented in the above picture is in Wisconsin.

tistics often group many related species as a single wood, as oak, or ash, or elm, or maple, or birch, or pine, though each name represents several species in actual use. There are, for example, fifty-two oaks, half that many pines, several elms, ashes, maples, and birches, and most of them figure in the furniture making of this country. There are numerous minor woods, not widely known because of their local occurrence or scarcity. Some of them are beautiful in color and figure, and in localities where they grow they are in more or less demand by furniture shops. Though few of these minor woods are named in statistics, they may be in much greater use than some of the foreign species which are on the lists. The wealth

from our own forests which are only superficially understood and appreciated by most people.

Furniture is classified in several grades or sorts, and most manufacturers specialize in certain kinds. Though chairs are furniture, most chairs, particularly of the common sorts, are not the product of factories which make other kinds of furniture. Chairmaking is sometimes considered to be separate and apart from the general furniture industry, or at least as a distinct branch of it. The moderate-priced dining room or kitchen chair is an interesting product, if its method of manufacture is taken into account. Much of the stock of which these chairs are made never passes through the ordinary sawmill, but



CENTER TABLE OF FIGURED GUM

Veneer is put to its best use in furniture like this, where the finest figures are matched for display. The gum paneling on the walls completes the harmonious grouping. The photograph for this illustration was furnished by the Gum Lumber Manufacturers Association, Memphis, Tennessee.

of wood in this country cannot be fully appreciated unless account is taken of the lesser species as well as of the greater. More of these little-known woods are given a place in furniture making than in any other industry. Among species of this class may be named yew, torrey, yucca, mulberry, redbud, Santa Cruz ironwood, witch hazel, featherwood, devil's claw, junco, mesquite, red bay, yellowwood, holly, bluewood, mangrove, madrona, and manzanita. The list could be extended fourfold without getting outside of possible furniture material

is the output of small, usually portable chair mills which work out the blank dimensions for the rounds, backs, bottoms, posts, spindles, and braces. This rough stock is sent to central factories to be made into finished chairs ready for use. One such factory may take all the stock cut by dozens of the small chair mills located within a radius of a hundred miles. These small mills are equipped with special machinery for cutting the various chair parts. The majority of such mills move from place to place, working up patches of timber which are not ex-

tensive enough to attract lumber mills. Or, as frequently happens, the chair mill follows after the sawmills and works up the leftovers, such as short and crooked logs, small trees, and large branches. The chair dimension stock is of such small sizes that nearly any odds and ends from

previously cut-over lands can be handled. In

that way the chair mill utilizes what otherwise would be waste. Such mills operate in hardwoods almost exclu-



A HIGH GRADE VENEER PLANT

This veneer mill is located at Escanaba, Michigan, and it specializes in birds-eye maple veneer for furniture and house finish. Experts locate figured trees in the forests of maple and the selected trees are taken to the mill and are converted into thin sheets to constitute the visible parts of finish and furniture.

sively, because few softwoods are strong enough for chair stock.

Chairs of special kinds are made in large numbers, among them being theater and hall chairs, those for camps and resorts, rustic, porch, and lawn chairs, and many other kinds that are in constant demand. Parlor rockers and others for living rooms, arm

chairs, and high class pulpit and rostrum chairs are some of the kinds included in the chair branch of the furniture



MAHOGANY FOR VENEER

During the past 200 years mahogany for furniture has never gone out of fashion in America, though the demand for it has varied from time to time. The picture shows a flitch of this wood going against the knife in a mill to be converted into furniture veneer. Mahogany comes from west Africa and tropical America.



THE FOLDING CHAIR

Immense numbers of folding chairs are made for camps, halls and other places of meeting. Most chairs of that kind are of medium priced woods, rather plainly finished, and they are not intended for show. Others, like opera chairs, are of the finest woods and of the best workmanship.

trade. The higher grades are generally made in regular furniture factories.

Furniture manufacturers who produce on a large scale, generally concentrate upon certain

kinds. Statistics which give the details of furniture manufacture in Illinois will show this, and the situation there is typical of the industry throughout the nation. In that state furniture is divided for statistical purposes in eight classes. The table which follows names the classes in Illinois, shows the annual consumption of wood by each class, and the average costs of the rough material delivered at the factories:

Kind of Furniture	Ft. of Lumber	Av. cost per M ft.
Chairs.....	16,262,000.....	\$41.99
Tables.....	8,167,500.....	41.11
Couches.....	7,826,000.....	22.11
Schools.....	7,800,000.....	28.06
Parlor.....	6,207,666.....	39.36
Barber.....	1,457,000.....	41.99
Kitchen.....	1,150,000.....	20.57
Willow and Reed.....	217,000 lbs. 12½ cts. a pound	



POPULAR FURNITURE FOR OUTDOORS

There is a growing demand for outdoor furniture for parks, lawns and porches. Swings, chairs, and benches are combined in numerous patterns. For furniture of this kind wood is wanted which will resist decay when exposed to the weather. The swing shown in the accompanying cut is of Douglas fir.

Clothes chests, movable wardrobes, and other receptacles for clothing, fill places as furniture in modest as well as in costly houses. The woods of which these are made are carefully selected. Fine polish and exquisite carvings are freely bestowed on them, and they display these artistic touches to excellent advantage. Mahogany, oak, walnut, and cedar are the favorite woods for furniture of this class. Southern red cedar, incense cedar, and Port Orford cedar are popularly believed to emit odors which drive away or kill moths and other insects which are liable to injure clothing. Because of this belief, the cedar chest has become one of the most extensively used articles of household equipment. The sharp contrasts in the colors of cedar wood when heartwood, sapwood, and knots are dispersed over the exposed surfaces, are unique and attractive. Cedar is one of the few woods which are the more valuable for chests the more knotty they

A WELL NIGH UNIVERSAL
ADJUNCT

The little wooden wheel known as a caster is found nearly everywhere that furniture is used and its importance should not be underestimated. Some are of metal, but the best are of wood, and the harder the wood, the better. Lignum-vitae ranks highest, and Turkish boxwood is next, but maple, birch, beech, persimmon, and dogwood are satisfactory.

are. This is true particularly of the southern red cedar.

THE DINING ROOM CHAIR OF
QUARTERED OAK

Chair making and furniture making are often considered as separate industries, because plain chairs are frequently produced in factories which make little else, but it is not necessary to consider the two industries as distinct, for no hard and fast line divides them. There are scores of styles of chairs.



QUARTERED OAK ROCKING CHAIR

Quartered oak differs from other oak principally in the way it sawed, though the figures of some are much finer than of others. Sawing on radial lines exposes the bright rays to view. The quartered wood shows to best advantage in large surfaces, and only a few woods possess figure that can be so brought out, among such being oak, ash, chestnut and sycamore.

The real efficacy of cedar's odor in ridding premises of insects is a matter of opinion, but the consensus of opinion seems to be that its reputation is well founded.

Furniture makers consume great quantities of veneers. It has not been so always, though some veneer has been worked into furniture "since a time whereof the memory of man runneth not to the contrary;" but until a few years ago, an occasional band or strip of inlay constituted the principal employment of veneer by the makers of furniture. It was once commonly believed that the use of thin sheets of wood glued upon surfaces indicated sham and cheapness. The belief was erroneous, but it did not disappear until quite recently.

At the present time most good furniture is veneered, but all is not; and instead of regarding veneer as something snide, sleazy, and cheap, it is now accepted as an indication of quality. The use of these thin sheets has been responsible for the division of furniture in two classes, "veneered" and "solid," and it has led likewise to much controversy as to what is the precise meaning of these terms. Solid furniture may be made of thick lumber without veneer facing or laminated panels; or it may be constructed of built-up sheets of veneer, all of the same wood. These are the two ways of looking at it; some hold one view, some the other. If furniture which is built up of veneer sheets is to be considered as "solid," it is held that it must consist of one wood only. Thus a table made of thin sheets glued one upon another, may properly pass as solid mahogany if no wood except

mahogany is used; but some persons do not consent to that interpretation of the term and insist that solid furniture must be made of lumber and contain no veneer.

By the use of veneers to cover the outside, visible parts, fine furniture may be had at less cost than would be possible if the whole article were made of lumber; because the hidden parts may be constructed of cheap material while the thin sheet of costly wood forms the outside layer only. For example, a finely figured walnut

board one inch thick is required for a table top, if lumber is used; but the same board may be sliced into thirty sheets of veneer, every sheet as handsome as the original board, and the product is sufficient to give a figured walnut finish to thirty table tops, instead of only one, as would be the case if thick boards were used without slicing.

The use of veneer for furniture is economical, because a little fine wood can be made to go a long way. The built-up panel, with costly wood on the surface and cheap kinds in the hidden part, are as good as solid lumber, and often better, for the reason that laminated panels are less liable to warp, crack, swell, or shrink.

The wood upon which veneer sheets are glued is called backing or core stock. It

may be cheap, but it must be well suited to its purpose, and must be seasoned before it is used. Numerous woods are employed as backing, but if manufacturers were asked to choose by ballot the best, the vote would probably designate white pine, chestnut, and mahogany.



STYLE OF RUSTIC FURNITURE

Householders on the frontiers used to make rustic furniture for their own homes, or go without. In recent years factories have revived the backwoods styles and they have become quite popular. This chair is of hickory and the picture is from the catalogue of the Old Hickory Chair Company, Martinsville, Indiana.

DONATIONS TO THE WELFARE FUND FOR LUMBERMEN AND FORESTERS IN WAR SERVICE

A **AMERICAN FORESTRY** will publish each month the list of those making donations to this fund. Many of the donations from members of the American Forestry Association so far received were made without solicitation and were inspired by reading in the magazine that a relief and comfort fund for men of the forest regiments was being collected. Many substantial contributions are being received from the Forest Service and from lumber companies and lumbermen following requests sent to them by the Secretary of the Welfare Fund for Lumbermen and Foresters in War Service, by the lumber organizations of which they are members, and by the committees of lumbermen which had charge in various sections of the United States of securing enlistments for the forest regiments. Contributions should be sent to P. S. Ridsdale, Treasurer, 1410 H Street, N. W., Washington, District of Columbia.

Contributions to the Welfare Fund to December 5, 1918, are as follows:

Previously acknowledged	\$20,684.06
Daniels, C. D., Hoquiam, Washington.....	2.00
Kellogg, R. S., New York City.....	10.00

Simmes, Frederick R., Kent, England....	6.50
Thorn, M., Philadelphia, Pennsylvania.....	25.00
Total	\$20,727.56

CHRISTMAS BOXES FOR THE FOREST AND LUMBER REGIMENTS

SOME time ago P. S. Ridsdale, of Washington, District of Columbia, Secretary of the American Forestry Association and Treasurer of the Committee having in charge the Welfare Fund for Lumbermen and Foresters in War Service, cabled to headquarters of the 10th and 20th Engineers (Forest) in France and notified the military commander that the Committee would be glad to have any of the men of these contingents who were otherwise unprovided for send their Christmas labels to the Committee. This notification was posted on the bulletin boards of the various camps and resulted in the sending in of 434 labels. Two hundred and eighty-three labels were received in time, to send off the Christmas boxes, but the remainder unfortunately were not received until after November 30, the very last day on which Christmas packages for the men overseas might be mailed. The Committee, therefore, purchased one hundred and fifty-one three dollar express money orders, and one was sent to each man whose label came too late for a Christmas box, together with a little card bearing the greetings and good wishes of the Welfare Committee.

A committee of Forest Service women, under the general chairmanship of Mrs. Henry S. Graves, wife of the Chief Forester, very kindly volunteered to pack the boxes for the boys, and this work was done under the personal direction of Mrs. Lilian T. Conway. An effort was made to have each box a little different but in each there was one substantial gift, like a good knife, a fountain pen (six ink tablets were sent with each pen), a nickel-plated watch with khaki strap, or a flash light, together with the following: Khaki handkerchief, Christmas card, one cake soap, one shaving stick, one pack playing cards, one package Lucky Strike cigarettes, one package Pall Mall cigarettes, one tube tooth paste, one pencil with metal holder, one box candy (one-half pound), loose candy, three packages

chewing gum, and three packages mints (Life Savers or Scotmints).

Everyone who has contributed to the fund which made it possible for the Committee to brighten Christmas a bit for the boys of the Lumber and Forest Regiments will be glad to know that the Committee has already received many enthusiastic letters of appreciation from which the following excerpts are taken:

"A notice was posted on the bulletin board in our camp to the effect that you would be glad to send Christmas packages to any member of forestry organizations and since I have no relative in the United States I am sending my coupon to you. I assure you that I appreciate deeply your kindness in making the offer."

"I will more than appreciate one of the Christmas boxes offered by the Forestry Welfare Fund. Thanking you in advance," etc.

"I have read your kind offer and will take advantage of it. I am enclosing my Christmas coupon."

"At the rate we fellows are going the Kaiser ought to be hanging on a Christmas tree as a display for the A. E. F. that would be our best package. We are all in it to do our best and lick him good and proper."

"My kindest regards to all back in grand dear U. S. A. and to yourself a Merry and Happy Christmas."

"Your kind offer to send us Christmas packages received at our camp here in France, if we have no one we would like to bother, or who

needs the cost of a Christmas box more than we do over here. I feel as though the circumstances are that way so I will take advantage of your kind offer. I am sending my Christmas package coupon in this letter. I have been in France since last January and have been working as cant hook man most of the time. We have had a very pleasant summer but are again due a rainy and nasty winter. Our hope is that the Kaiser will kick in by next spring so we will be on our way home by next year at this time. My home is in Montana. I am sending my thanks in advance. With best wishes,

"(Signed) A LUMBERJACK."

"In accordance with instructions contained in your cablegram enclosed please find a number of Christmas package coupons from some of the members of our Company who have no relatives or friends to whom they can send their coupons. These men requested me to convey to you their deepest appreciation for anything that you may send them."



PACKING CHRISTMAS BOXES FOR MEN OF THE LUMBER AND FOREST REGIMENTS

Christmas boxes for 283 men were filled with good things from home purchased with money supplied from the Welfare Fund for Lumbermen and Foresters in War Service. The articles were selected and packed by ladies of the Washington office of the Forest Service, co-operating with the Welfare Committee.



CHRISTMAS WITH THE BIRDS

BY A. A. ALLEN, PH.D.

ASSISTANT PROFESSOR OF ORNITHOLOGY, CORNELL UNIVERSITY



THE north wind whistles about the caves. The snow crunches under foot. The leafless branches are whitened with ice and Jack Frost has been decorating the windows. It is winter; it is Christmas time. Our thoughts are upon good old Santa Claus or upon the shrinking coal bin. Birds have been dismissed from our minds. They have gone the way of the green leaves, the wild flowers, and the parasols. They were not meant for winter weather.

How we envy them their freedom of movement. They have but to spread their wings to satisfy their craving for warmth or for company. Palm Beach, Jamaica, the Tropics, are theirs for the effort. No ties to bind them to the frozen north country, no responsibilities to hold them, what a life it must be!

We sit by our fire places and think of our robins fattening on the mistletoe berries along the Gulf. We picture the orioles flitting among the banana palms and the coffee trees of Costa Rica, and we see the bobolinks picking the rice at the equator. We look through the frosted windows upon the whirling snow and stiff swaying branches and say to ourselves, this is no place for birds.

But even as we say it, a chorus of mellow notes announces a flock of snow buntings. They whisk overhead to some

wind-swept field where the tops of the weeds still project above the snow to afford them a frugal living. A few shrill peeps tells of a tiny chickadee or a kinglet clinging to the swaying branches and searching for scales and insect eggs. The "yank-yank" of the nuthatch and the sharp calls of the downy and hairy woodpeckers tell us that at least some of the birds are still with us.

Some, like the snow buntings and tree sparrows, have come down from the far north to spend the winter, but others, like the chickadees and nuthatches and woodpeckers, have been with us all summer and yet seem to prefer braving the long winter to moving south. We should not

then have dismissed the birds from our minds, even though it is winter and the fire-place so fascinating; even though it is Christmas day.

For nineteen years the bird lovers of this country have set aside Christmas morning for a walk with the winter birds. The making of a Christmas bird census is now a part of the life of every ornithologist and the year is not complete until the list of birds which he

has seen on Christmas day has been sent to headquarters to be published in the January number of *Bird Lore*. From Nova Scotia to California and from British Columbia to Florida, hundreds of these reports are sent in. By referring to



SNOW BIRDS IN A SNOW STORM

Juncos are often called snow birds because they most often come about the house during snow storms. In this sort of weather birds need food and many perish if the weeds get entirely covered.



SNOW BUNTINGS AND HORNED LARKS ENJOYING THE SEEDS SCATTERED FOR THEM ON THE SNOW

The snow buntings are the whitest of all our small birds and earn for themselves the name of "snowflakes."

them, one can tell at a glance the winter birds that have been found each year in every part of the country.

Herein lies the value of the census, for while some species of birds are more or less uniform in their winter distribution and are seen abundantly every year, many species are very erratic, one year being very abundant in a locality and the very next year being entirely absent. Thus last winter there was a flight of

remains to be seen but it is quite likely that some unusual species will appear in considerable numbers.

Herein lies the sport of winter bird study. Birds, as a rule, are not numerous, but those that are present are rather conspicuous and one can tramp the woods and fields with the assurance of finding all the birds of the vicinity.

There are four types of birds to be found in winter. First, those that frequent the open fields away



A BANQUET FOR THE GULLS

Table refuse has been spread on the snow and the gulls have come up from the lake, which can be seen in the distance, to dine. The crows are waiting their turn at a safe distance.

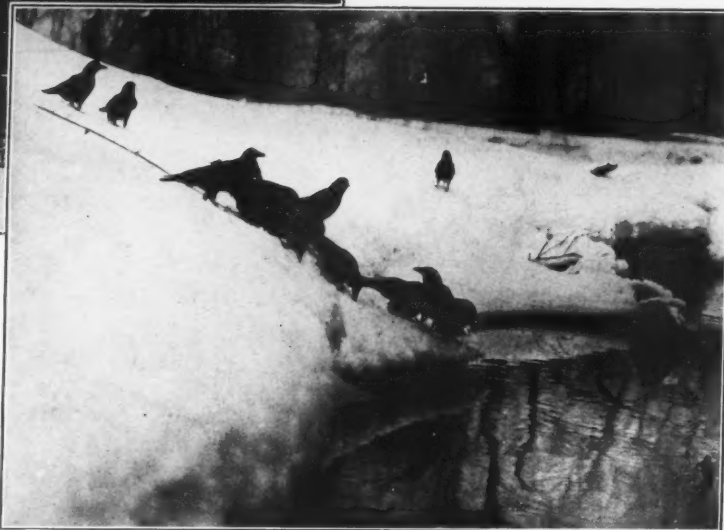


SOME UNUSUAL VISITORS

Evening grosbeaks on a feeding log. They are birds of the Northwest and wander into Eastern United States rather erratically.

northern shrikes over the entire Northeast and in Ontario and New England, there was a flight of great horned owls and goshawks. The winter before was remarkable for the great influx of brown-capped chickadees from the north and the unusual numbers of redpolls, pine and evening grosbeaks, crossbills and pine siskins. What this winter will bring

from bushes or shelter of any kind and live upon the seeds of such weeds as project above the snow. Secondly the woodland birds that feed upon hibernating insects, upon dried berries and fruits, or upon seeds. The third group consists of the water birds, the ducks, grebes, loons and gulls that are able to withstand the winter and find their food of fish and aquatic life where the waters never freeze.



A CROW FAMILY REUNION

The right caws will start a crow reunion almost any day. Here a little grain intended for wild ducks got spilled on the snow.



WITH US THROUGHOUT THE YEAR

Some of the winter birds are those that come down from the North, but others are species which have nested in the vicinity and prefer braving the winter to moving South. Here are a hairy woodpecker and a white breasted Nuthatch.

Lastly there are the carnivorous birds, the hawks, the owls and the shrikes that feed upon other birds or upon small rodents.

In the northern states where the



A WINTER ROBIN

In the south robins are common all winter, but in the snow states only an occasional bird is found in sheltered spots where berries are plentiful.

snows are deep, the field birds are always few in number. Some winters they are almost absent though not because of the severity of the winter, but usually because it is so mild in the far north that it is not necessary for them to come so far south even as northern United States. In the southern United States where snows are infrequent and there is an abundance of seed



AS THE CROW WALKS

If he flew no straighter than he walks the old adage would have little meaning. Note the narrow angle made by the toes, the mark of the hind toes and the dragging of the feet, all of which are characteristic of Jim's tracks.

available all through the winter, the numbers of field birds is often large for most of the seed-eating species that nest in the northern states are content to go on further south than the southern states for the winter.

Of the snow-loving species, none is more typical than the snow bunting whose very coloration is sug-



A NORTHERN SHRIKE OR BUTCHER BIRD

Many of the winter birds are erratic in their wanderings and are not seen every winter. Last winter there was an invasion of Shrikes over the entire Northeast. This bird was attracted by the mouse fastened in the thornbush.

gestive of an animated snow flurry. The more blustery the day, the better they seem to like it as they crouch or run across the crust or take wing with a sweet rolling



PEEK-A-BOO IN BIRD LAND

A downy woodpecker and a chickadee are uncertain as to the nature of the bird on the opposite side of the tree.

twitter. The large white patches in their wings, added to their white heads and breasts, give them a very wintry appearance. With them are sometimes a few of the sparrow-like Lapland longspurs, especially in the north-



GOOD WEATHER FOR TAMING BIRDS

Birds lose their fear when food gets scarce and the easiest time to tame them is during the long heavy snow storms.

western states, for in the east they are very erratic. Horned larks and redpolls are much more likely to be seen than the longspurs although even they are irregular in their appearance.

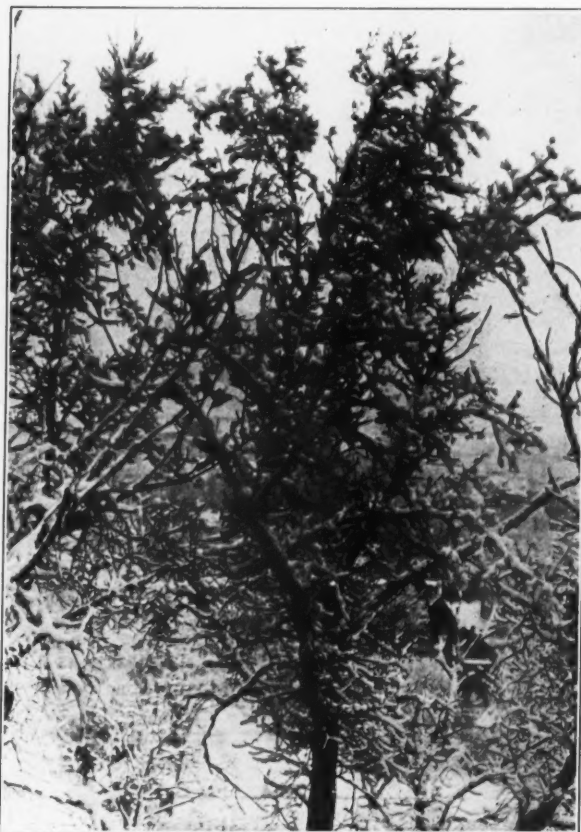
Along the borders of streams and marshes in the northern states, along the edge of the woods, or wherever there is shrubbery, tree sparrows, juncos, and occasional song sparrows are almost sure to be found. Further south the white-throats, fox, swamp, field and chipping sparrows, meadowlarks, towhees, cardinals and many other birds can be expected. Where berries still cling to the vines and bushes, robins, bluebirds, mockingbirds, hermit thrushes and myrtle warblers will be found in the south, but in the snow states, fruit-eating species are scarcer. One is lucky if he runs upon a flock of cedar waxwings, a grouse, a pheasant, a blue jay or a lone robin, though, of course, the omnivorous crows are everywhere abundant.

Down on the bay or out on the lake are flocks of ducks—redheads, scaup ducks, canvasbacks in large flocks over the weed beds; small groups of black ducks, mergansers, goldeneyes, old squaws and occasionally other species. With them are a few loons and grebes which seem to spend as much of their time beneath the

water as above and, coursing overhead, are numbers of graceful gulls ever ready to pounce upon any floating fish or dying waterfowl.

The carnivorous birds are less numerous than any of the others and it is usually a red letter day when one finds a hawk, an owl or a shrike. Once one has located their winter haunts, however, he can tramp with reasonable certainty of finding them. The little screech owl usually has some particular knot-hole that he is fond of sitting in, the short-eared owl roosts in the same corner of the marsh, and the long-eared in the same evergreen thicket, week after week. The hawks and the shrikes often have a rather definite circuit which they follow and though it may cover miles of territory, they often arrive at the same place at about the same time every day.

But if one is fond of the winter birds, it is not necessary that he should go far afield. If he commences in the fall to put out the foods that they like, he can expect to attract almost any species to his own windows during the course of the winter. If he delays putting out the food until the birds have formed more or less definite circuits which they follow for the rest



A STUDY IN BLACK AND WHITE

Never is a crow so black as when seen against the snow covered branches.

of the winter, he is apt to be much less successful in attracting them unless his garden happens to lie in the circuit. Suet for the woodpeckers and other insectivorous birds; millet, chick feed, or screenings from grain,

for the seed-eating species will prove most successful lures. Crumbs of raw peanuts and sunflower seeds are relished by all species. If one succeeds in attracting a few birds to his feeding station others are apt to follow them and surprise follows surprise. One awakes to hear a new voice and finds a stranger at his board and always the stranger is welcome. The flocks of juncos and tree sparrows grow in size, the numbers of chickadees and nuthatches are slowly augmented, woodpecker follows woodpecker until one has a goodly number of pensioners that come right to his window sill and invite him to come out and enjoy the Christmas weather. Many of them will become tame and some may even learn to take food from one's hand without a sign of fear.

Indeed one need not be surprised when tramping at some distance from home or any of the feeding

stations to have a little chickadee fly down and alight on his head or his shoulder as though he recognized him even out there in the woods.

On Christmas day the children delight in adding a Christmas tree for the birds to the feeding station. Melted suet into which sunflower and other seeds have been stirred can be poured over the branches of the evergreen to which it will adhere. It will last for many days and the birds enjoy hopping among the branches and picking the tidbits from the boughs. Surely, if one cannot tramp the fields,

it is well worth while to have a Christmas with the birds at home.



SOME CHRISTMAS WATERFOWL.

Scamp ducks enjoying a dinner that has been spread for them along the edge of the ice.

SUPERVISOR McMILLAN GIVES HIS LIFE FOR HIS COUNTRY

FIRST Sergeant Lanning Ross McMillan, Co. B, 29th Engineers, U. S. A., was killed in action in France on August 16th by an exploding shell fired from the enemy's guns.

He was born in Buffalo, New York, August 9, 1877, and was the youngest son of Hon. Daniel H. McMillan, formerly a state senator and for many years attorney for the New York Central and Lake Shore Railroads, and subsequently United States district judge for New Mexico.

Young McMillan attended Cornell University, afterwards entering the United States Forest Service, finally becoming supervisor of the Jamez, Pecos and Carson National Forests, with headquarters at Santa Fe, New Mexico.

He enlisted last November in the 29th Engineers



LANNING ROSS McMILLAN—A HERO OF THE WAR

from Camp Devens, Ayer, Massachusetts, and was sent overseas in February. He had been advanced steadily and would shortly have received his commission as second lieutenant.

Surviving him are his mother, one brother and three little children, all residing at Corona, California.

SELECTED white birch, obtained in this and other sections of New England, is playing a highly important part in the work of mercy being carried on in connection with the European war. This wood is finding its way to the battlefields of France in unprecedented quantities, after having been transformed into boxes and containers for drugs and medicines used in hospital and Red Cross work.

PICTURES AND PLANTS FOR CHRISTMAS, WITH AN ELK STORY.

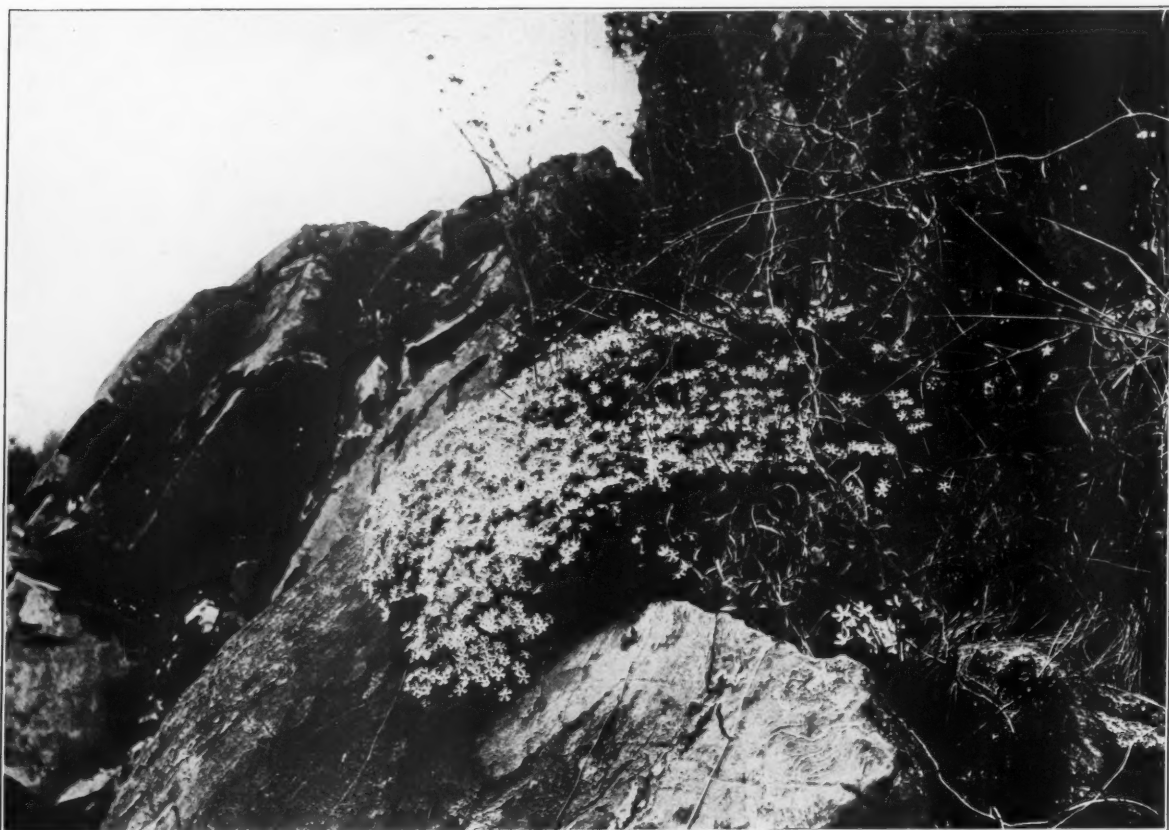
BY MAJOR R. W. SHUFELDT, M. C., U. S. ARMY.

MEMBER OF THE ANTHROPOLOGICAL SOCIETY OF FLORENCE, ITALY, ETC.

(PHOTOGRAPHS BY THE AUTHOR)

WITH December and Christmas time at hand, there often comes over us a disposition to live again the pleasant outings and collecting trips we enjoyed during some of the previous months of the year; at other times, during the season, we perhaps indulge in anticipating the pleasures that may be in

Passing from such a scene, the mind may next carry us to some deep, rocky gorge, where one day during the previous April was spent. Every trace of the past winter's snow has melted away, and the warm breath of spring has called to life once more one of the very earliest flowers that will, with marked certainty, be



ONE OF THE MOST WONDERFULLY BEAUTIFUL FLOWERS OF EARLY SPRING IS THE GROUND OR MOSS PINK, HERE SHOWN IN ALL OF ITS LUXURIOUSNESS

Fig. 1—Moss Pink is a well-known representative of the Phlox family (*Polemoniaceae*), of which we have nearly a dozen species in eastern United States.

store for us after January, February and March have passed by, when we can, once more, enjoy the balmy days of an early spring. When one of the latter reveries takes possession of us, the earliest spring flowers naturally enter into the picture. Up the bare hill-sides or in the open forests, long before the oaks, the chestnuts, and the beeches begin to feel the effects, in bud and bark, of their rising sap, the anemones, the early saxifrage, and bloodroots are there to be seen, smiling upon us in charming little scattered groups, made all the more conspicuous by the dark earth where they are found.

found growing in great luxuriance in regions of this character. It is not difficult to guess the name of this plant—it is none other than the widely known moss pink, so named and described by botanists and by all those who are at all familiar with it.

A few miles above Washington, in the rocky gorges of the Potomac River, one will find, early in April, this elegant Ground or Moss Pink, flourishing in all of its native beauty as it is here shown in Figure 1, and, upon nearer view, in Figure 2. These pictures tell their own story and with far greater vividness than any pen could do.

Phlox is one of the three genera of the Polemonium family occurring in the Atlantic States region and as far westward as Kentucky. Gray describes the group as an "insipid and innocent" one, while we are all aware of the fact that many species of them have long been under cultivation, and among these the species now being described. The various varieties of "Sweet William" are others, the wild type of which is *Phlox maculata*. Then there is the Blue Phlox (*P. divaricata*), and the tall species we are all so familiar with, occurring, as it does, in many gardens in the country. As may be noted from Figure 1, the Moss Pink grows usually in masses, resembling some great pink—or perchance white—mat, with



HERE IS HOW THE MOSS PINK FLOWERS APPEAR WHEN WE COME UP CLOSE TO THEM; THE RECESSES AMONG THE ROCKS GIVE THEM A FINE SETTING IN THIS PICTURE

Fig. 2—The flowers are not always of a pink color; they may be of a pink-purple shade, ranging through various lighter shades to a pure white.

its flowers so numerous as to almost entirely conceal the modest stems and leaves beneath them.

In the Polemonium family we also have arrayed the genus *Gilia*, a group dedicated to a botanist of Spain—Senor Felipe Gil. Standing Cypress is one of these (*G. rubra*), a plant carried into certain restricted areas of Ohio and Massachusetts, where it is now found grow-

ing along roadsides and in pastures. Polemonium, or Greek Valerian, is also generally associated with the phloxes, and we meet with two species of it in the north-eastern sections of the country and southward.

Some of the wintry days of December may, with marked profit, be spent in strolls about the famous National Zoological Park of Washington, more widely known as the National "Zoo." Here we see scores of examples of how animals of many species and families pass the winter months in captivity. Some of them spend



Fig. 3—Both in nature and in captivity the American Swan is capable of enduring great cold.

their entire time out-of-doors, while others only occasionally enjoy this privilege. On the other hand, some must be coddled under cover with the greatest care, or their lives will indeed be cut short long before the warm days of spring again put in an appearance.

The wild swans, those most elegant and graceful of aquatic birds, when in their natural element delight in remaining in the open

throughout the entire winter, however cold it may come to be. (Fig. 3). In nature, as well as in captivity, there is no more memorable sight of the kind than to observe several of these superb birds, as with arched necks and wings erect, in the most perfect silence they keep their course down mid-stream, with glistening ice upon either side, and both banks covered with an

unspotted snow lain down by a silent storm still unfinished. We have three species of wild swans in our national bird fauna, and they are each and all becoming very rare in nature; indeed, one of the species is already nearly extinct. The merciless weapons of gunners have almost exterminated them, and this senseless slaughter still goes on. Our wild swans (*Cygninae*) all fall into the genus *Olor*, and the three species referred to are the Whooper Swan (*O. cygnus*), the Whistling Swan (*O. columbianus*), and the Trumpeter Swan (*O. buccinator*). It is hardly necessary to say that their nearest allies are the geese and the ducks, of which latter we have a great many species.

In these days we find gray squirrels not only throughout the broad expanse of the "Zoo," but all over the city of Washington. They are abundant in most of the parks; on the grounds of homes having sufficient area to accommodate a tree or two, and still more plenty in the near-at-hand timber of the suburbs. In Figure 4 we have a "Zoo" specimen of this favorite species, and throughout that domain the animal has become quite as tame as the ones in the parks of the city. In some parts of the Smithsonian grounds, you are hardly seated on one of the benches before two or three little fellows will run toward you and beg for peanuts—a food of which they are very fond. Several albinos among them—or rather partial albinos—are to be seen in that locality, one in particular being an especially handsome creature. There is a black variety of this squirrel, which is a very handsome animal when in full pelage. A few of these are also to be seen in the "Zoo" grounds, but more particularly on the fine estate adjoining it along its western boundary.

There are some wonderfully attractive scenes in this National "Zoo" of ours at this season of the year, which are never better appreciated than after a quiet fall of a few inches of snow. Those who have availed themselves of the opportunity to visit the place at such a time, will be sure to recognize the structures here shown in Figures 5 and 6. The first indicated is that of the 'Coon Cabin, and the second is the Llama House. None of the occupants were in sight at the time these pictures were obtained, which is too bad, as it would, in either case, have greatly enhanced the interest in the results. It will be admitted, nevertheless, that as snow scenes, where so many people find pleasure and instruction at all times of the year—even during snowy December days

—these cuts will surely appeal to a large constituency of those who may be among that number.

Racoons are animals that possess decided arboreal habits; and so, when the little cabin was built for them, to which the reader's attention has been drawn, care was taken to erect it close to a big tree (Fig. 5). And so there are many who are, during certain seasons of the year, familiar with the sight of several old 'coons sunning themselves up among the branches of this tree, some fifty feet or more above the ground. Racoons are still to be found wild in certain parts of this great zoo preserve, as are also weasels, mink, skunks, and other small predacious mammals. It is also remarkable how many different species of birds breed within the limits of the Park—even Night Heron, and such forms as crows, blue jays, owls, mourning doves, and no end of smaller birds.

In Figure 7 we have an unusually fine example of common commercial cotton in full seed, and it is quite fair to demand an explanation of its appearance in this our Christmas story for AMERICAN FORESTRY. Yes, it is surely wintry-looking in a way, for it is pure white and fluffy, but this is not altogether the reason. Guess again. Think of the demand for bates upon bales of cotton along about the end of December, which is greatly in excess of the usual monthly market demand for that staple product. Of course this does not refer to war times, when immense savings are being made along all lines, and to which enforced economy cotton forms no exception. The answer is not far to seek. A moment's reflection will bring

to mind the mass of cotton we use—or rather did use—during the good, old Christmas times to trim the Christmas trees with; to decorate the homes and not a few public places with—and it would make a bale of no mean dimensions were we to gather together all the cotton that had been used to furnish beards for those who had, throughout the land, played the part of Santa Claus, to add to the joy of thousands of children from one end of the country to the other. Such a custom is not dead by any means; and when the happy days of peace come to us once more, and a tumble in cotton takes place, as well as in a thousand and one other commodities, this custom of the good old days will be established once more, with all the joyousness that was associated with the time-honored holiday season of antebellum days.



Fig. 4—This old grey squirrel is a good poser, as he cracks the first nut of his winter's supply.

THE ELK HERDS OF WYOMING OF FORTY YEARS AGO

(PHOTOGRAPHS BY THE AUTHOR; CLARK'S GROUP IN THE U. S. NATIONAL MUSEUM USED AS A MODEL)

THERE was a time in the history of our kind—in so far as it referred to the higher races of man—when no effort whatever was made to preserve and protect any of the other living forms on the earth. From cave men and before, down to an age that might easily fall within the period of latter-day history, in all regions inhabited by mankind, a ceaseless warfare upon the world's big animals has been carried on by man. They have been the object of his chase, whether for food, for sport, or from sheer wantonness, and there were probably no exceptions to this rule. Mammoths, moas, cave bears, buffalo, elk and the rest, were indiscriminately slain with the crude weapons of those pristine hunters. Form after form disappeared through this and other agencies, while man persisted, vastly multiplied and spread, from a number of centers, far and wide over the earth.

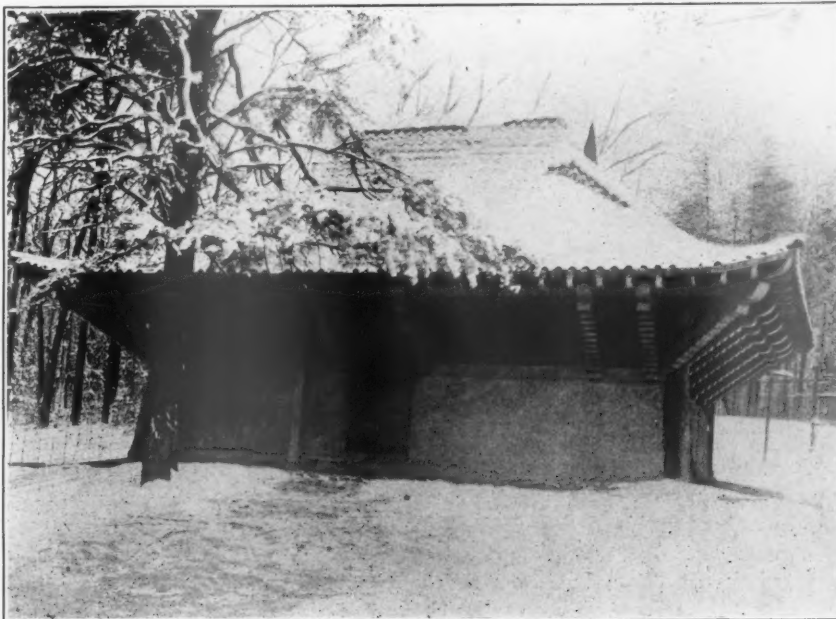
After the passing of many centuries, man began to realize

what he was doing in such fields, and steps were taken, in a few instances, to stay the extinction of certain large mammals. Within comparatively recent time, the aurochs



THIS IS ONE OF THE MEMORABLE FEATURES OF THE NATIONAL ZOOLOGICAL PARK AT WASHINGTON

Fig. 5—Few would guess what this attractive little cabin was built for; but an old racoon or two coming out from beneath it soon tells the story.



THE LLAMA HOUSE AT THE NATIONAL "ZOO" IS ONE OF THE MOST ARTISTIC STRUCTURES TO BE SEEN IN THAT FAMOUS PRESERVE

Fig. 6—At one time a splendid specimen of the Black Llama was kept here, with several other species in the adjoining paddock.

or bison of Europe furnish a well-known example of this pious step. "This is the most interesting survival of the primitive fauna of the Old World," says a writer at hand. "It is still found wild, though protected, in a large forest in Lithuania, the property of the Czar of Russia, called the Forest of Bielowitza. A few are also left of the purely wild stock in the Caucasus. Those in Lithuania have been protected for several centuries, and the herd is numbered from time to time. In 1857 there were 1,898 of these bison left; in 1882 there were only 600; the bison in the Caucasus had been almost forgotten till Mr. Littledale and Prince Demidoff gave accounts of hunting it there quite recently."

I am not informed as to how these European bison have fared

during the present war. This much is certain, however: the Czar of Russia is no more, and meat has been greatly in demand in all parts of that country; so one need not be surprised to hear that not a single specimen of the aurochs or European buffalo are now to be found anywhere in the world.

Thus it has gone, too, with many other large mammals, and those of the United States form no exception. Our antelope have been well-nigh exterminated, and a dozen other big species are following fast. Very well do I remember how plentiful the wapiti or American elk were in the mountainous regions of Wyoming during the latter part of the 70's. On one occasion,

Several years later, I accompanied Lieut. Lewis Merriam, of the 4th U. S. Infantry, on a hunting trip in the Medicine Bow Range of Wyoming, our Post being at Fort Fetterman, where I was stationed at the time as surgeon. It was a bitterly cold winter, the mercurial thermometer having registered over sixty below zero on one or more occasions. Merriam and I were companions on many hunts; he is now living in Washington, being a retired major in the Army, and he will remember some of the incidents recorded below.

On the occasion, I refer to, there had been a heavy snow, and the first night we made camp in the Range the mercury fell to 40° below zero. We had with us



OUR ELK IS ONE OF THE GRANDEST REPRESENTATIVES OF THE AMERICAN *Cervidae* OR DEER FAMILY; IT IS *Cervus canadensis* OF SCIENCE

Fig. 8—These magnificent animals at one time ranged over the entire United States, sometimes in herds of several thousands. In the Jackson's Hole region, Wyoming, the Federal Government is making an attempt to save a few of them, with varying success. (Photograph by the author, using Clark's group in the U. S. National Museum as a model.)

when serving as Post Surgeon at Fort Laramie, we had a very hard winter, and, during a heavy snow storm, a big bull elk trotted across the parade ground, between the barracks and officers' quarters. No one got a shot at him, and he was soon out of sight. The winter before, during another storm, a big bull buffalo entered half-way through the door of the officers' club room; it was snowing on that occasion, too, and the animal made good his escape.

Sergeant Mitchell and another enlisted man. To take back such game as we shot, we had an army wagon and a team of mules. At an early hour, after the first night's camp, Merriam and I, each with a fine mount, started out for the foot-hills of the first range of mountains, near which we had pitched our "A" tent. It was a superb day, and distinctly of a kind peculiar to the mountainous regions of the Middle West. It was not likely that any one else had been in that part of the

country for a year or more, and game was in great plenty—everything from an Abert's squirrel to a grizzly. As we came into the foot-hills, we followed a narrow game path along a frozen mountain stream; a willowy growth, higher than our heads, was upon either hand. Merriam was a short distance behind, leading his horse, and I was in the saddle ahead, with carbine loaded and ready for anything. We had proceeded but a very short distance, when a superb white-tail buck jumped up directly ahead of me—he ran but a short distance, when I downed him at the first shot. Merriam got into his saddle after that—so he could see better ahead of him! "Nuff sed."

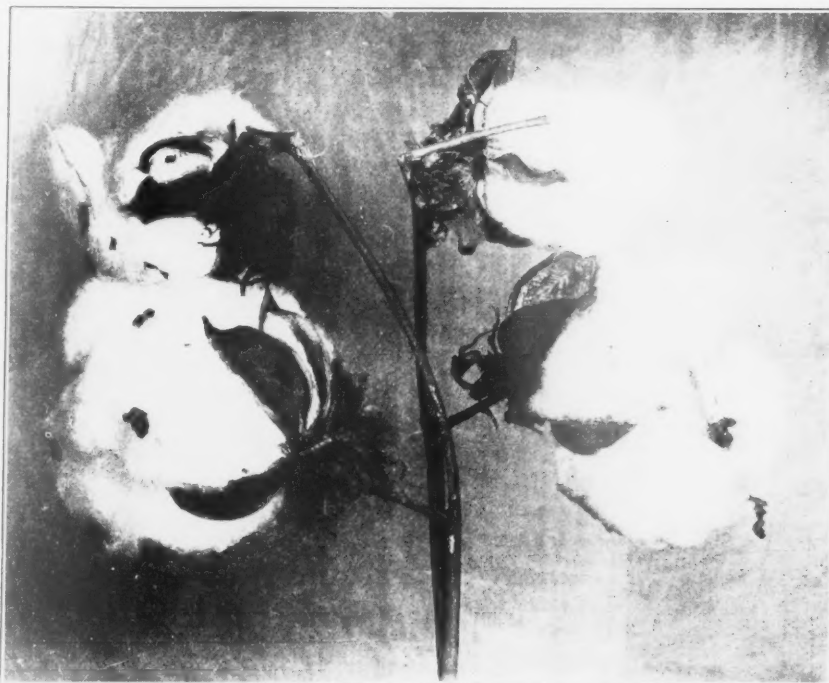
About the middle of the forenoon we were well up the side of the mountain; arctic temperature still prevailed, and a good breeze was blowing. We were ascending a path from which we could overlook the entire valley below; both of us were now mounted, and my companion was well in the lead. Suddenly he stopped, wheeled, and beckoned to me to catch up with him, pointing into the valley—and well he might. There was no mistaking what the long line of big animals were, as there were many great-antlered fellows among them. Elk! At least 500 of them, marching in close order in a long column of fours. They were coming up the mountain, and would

soon be in the timber some half a mile ahead of us. They quickly winded us, massed, and pushed for the timber higher up, while we pursued at a stiff gallop, dismounting when we reached their trail. This we followed as best we could through the heavy pine forest to the top. Great boulders of rock were scattered through the timber, the animals making deep paths among them in the snow as they herded through. All deer emit a peculiar, pungent odor from their odoriferous glands when excited and chased, and this was powerfully in evidence as we halted among the big rocks at the hill-top, close together, with our carbines loaded

and belts full of cartridges. We crept into a position overlooking the shallow, timbered valley immediately beyond; it was literally packed full of elk, and the wind was coming our way. Merriam was plumb blown from the run we had had, and he most generously indicated to me not to wait a second for him, but commence firing. As we were out after meat for the garrison, I availed myself instantly of his invitation, pulling up on an immense buck with a cow on the off side of him, at short range away. He dropped dead at the shot—the cow running a few hundred yards and then following his example. Two with on ball! This sight gave Merriam fresh wind, and together we opened on them as they massed in a narrow divide just beyond us. We downed in a few moments something short of a dozen, which later on were dressed and loaded on the wagon. While this was underway, I made after the herd as they spread out over the rolling foot-hills lower down; and as

I came up with them I killed a fine doe at four hundred yards, the shot causing them to band, and head for the hills once more. As my horse was in fine condition, I followed at top speed,—dragging a good part of my lariat and pin behind me for lack of time to coil it. Being now much excited and warmed up, the odor given off by the herd was more than oppressive. In their rapid ad-

vance they became more and more compact, and in this formation they made in between two foot-hills, with me hard after them. At the end of a few hundred yards, they discovered that they were in a gorge which did not admit of their escape—that is it was a blind ravine, with a steep and rocky termination. They very quickly reversed order, whereupon I promptly wheeled to get out of the way of their advance. Apparently it was only a part of the original herd, numbering a couple of hundreds or thereabouts; still, at that moment it looked like as many thousand to me. In less time than it takes to tell it, the leaders—a bunch of big bulls



COTTON, IN THE STAGE HERE FIGURED, FROM ITS VERY SNOWY APPEARANCE IN A WAY REMINDS US OF WINTER

Fig. 7.—This beautiful specimen of American Cotton was grown in a garden of one of the Public Schools of Washington, District of Columbia.

and a few does—were close upon the heels of my thoroughly alarmed pony, stepping every few moments in my dragging lariat. It was useless to do more than keep ahead of them the best way I could without being jerked out of my saddle. The bulls crowded close together, and every once in a while there was a fierce racket as their antlers rattled together, which was more ominous of my possible fate than exhilarating. As necessity, or opportunity, offered, I downed one of the big fellows, either with my carbine or a revolver; and in a very short space of time we were out again on the

rolling foot-hills, where the herd made off to the westward in loose order, leaving me and my pony behind—very much bruised and rattled up generally. In no pleasant frame of mind, I dismounted and scored once more, as a parting shot, downing an old bull who was then a few hundred yards away. Next day the wagon party came up to the scene and gathered them all in for the use of the garrison during the winter.

Note—It was entirely due to lack of space that Dr. Shufeldt's flower article and Dr. Allen's bird article, which are regular features of the magazine, were omitted from the November issue of AMERICAN FORESTRY.—Editor.

EDITORIAL

AMERICA'S OBLIGATION TO THE FOREST OF FRANCE

FOR one hundred years the Republic of France has with infinite pains been engaged in creating forests out of sandy wastes, reclothing with trees the barren slopes of mountains and repairing the ravages of flood caused by denudation of these slopes.

With firm belief in what still seems to some Americans an impossible ideal, the French people through their Forest Service succeeded, solely through tree planting and protective measures, in repopulating and rendering habitable and prosperous, whole districts formerly abandoned to sands or floods.

Under the stress of the war these forests, and with them the security and livelihood of the local communes themselves were undermined again and in many cases destroyed. The loss of the forests by gun fire on the battle front was unavoidable, and the character of their destruction beyond the exercise of choice. But how about the methods employed in cutting timber back of the lines, which went on all over France, until the smallest woodlots were searched out and the protection forests in the Landes and on the high slopes of the Pyrenees helped to feed the front? Do we realize what it means to France that she opened the doors of her protective forest barriers to her allies, how great a contribution she made by this act to the common cause, and what effect our methods of cutting might have upon these French resources.

The enormous consumption of wood by the armies in France had to be met either by imports or by the utilization of these French forests. Had it been a physical possibility to ship wood from the United States to supply our army, there would have been no question as to our duty. But the U-boat warfare and the bulk of wood products made such a plan impossible, and the French agreed to sacrifice their carefully husbanded forests, so that tonnage could be devoted to transporting men and food.

The least we could do under the circumstances was to furnish the labor to get out our own wood supplies, and to do as little damage to French forests as possible in the process. America organized the 10th and 20th Engineers (Forestry), to cope with this problem.

Most fortunately for the reputation of our country, the first officers to reach France to organize this service were men trained in forestry, who fully appreciated the French point of view, and knew not only the distinction between a virgin forest and one which had been laboriously produced during a century of care, but knew also how to reap the harvest of mature timber without ruining the forest itself and converting it into a barren waste resembling some of our cut-over non-agricultural pine stump lands.

But we faced a very real danger in conducting this work, through the urgent necessity of getting out wood products at high pressure. The force of men and equipment worked day and night—records for production were smashed daily—and still demand outran supply and more wood was called for. Military necessity looked only to the immediate present—any sacrifices were justified, that supplies were on hand when needed.

The constant pressure, both by military authorities, and by the lumbermen selected as officers of the 20th, was to secure men skilled in logging and milling, who could at once jump into the harness and produce lumber. In the selection of officers for the 20th Engineers, men of this type were chosen almost exclusively.

The most striking difference between the French poilu and the American doughboy is that the American is careless of his possessions and tends to extravagance, while the French waste nothing, and even in battle guard their equipment against loss. To an even greater degree this difference was shown in the war emergency cutting of timber. The French foresters and woods workers never lose sight of the future of their stands, and no one could distinguish between their "war" cutting and the ordinary operations of peace, except in the greater areas cut over. But American lumbermen start with little conception of conservative cutting. Their training leads them to neglect and brush aside all measures which interpose the slightest obstacles to speed and thoroughness in logging. If officers of this type had been placed in complete control of cutting, unrestricted either by French liaison officers or by trained foresters from America, great damage might have followed.

The possibilities may be illustrated by one instance where this actually occurred, as set forth in an article in the *Country Gentleman* for October 12, 1918, in which the writer states, "Frankly I have never seen greater pain written on human countenance than when I went with two French forestry officers attached to the army, through what was left of one of the most magnificent forests in all France. 'See'—exclaimed one of the officers—'it is gone—the work and care of a century. It will take a hundred years to restore the forests of France after the war.'"

That France might be willing to stand by and permit such devastation does not mean for an instant that she would excuse or forgive. The French people through painful experience following the Revolution learned that denudation must not be permitted even in time of war. What would be their thoughts had they been forced to view the highly efficient lumbering of crack American and Canadian forest regiments, *should it happen that this efficiency meant nothing more than making a clean sweep*

of their priceless forest possessions in record time? It has taken them a century to acquire the *art of forestry* which carries with it the ability to distinguish between lumbering as the sole objective and lumbering as a means of reproducing the forest and as the mere final step in this process. *They know* that "clean logging" such as practiced by our lumbermen on private holdings nearly everywhere in this country would ruin their forests and put them back to revolutionary times, and that it is wholly *unnecessary* and can be, and so far, fortunately, has been largely avoided, where men with a knowledge of forestry have been placed in control of the cutting on these French forests.

The French threw open their forests to the American army in the same spirit that they have given everything they have to the cause of civilization and the honor of our country was in the hands of these officers of the Forestry units to a degree hardly less than those on the firing line, and their work will stand for a century.

THE MINNESOTA HOLOCAUST

FOR the third time the danger ever lurking in Minnesota's great expanse of forest has materialized in a whirlwind of death, sweeping away property valued at \$100,000,000, and causing over 1,000 fatalities. Again we read the grim tale of families completely wiped out, of helpless women and children burned to a crisp while fleeing on foot or by team, vainly seeking shelter from the flames, or of boats overturned in icy waters and benumbed unfortunates sinking to death in the waves.

Why should these things be, when the state has had this grim lesson driven home twice before—at Hinckley in 1894, and at Baudette in 1910? The answer is not far to seek. The same selfish and blind incompetency which as late as the winter of 1916 sought to destroy the independence and integrity of the system of state forest protection by making it a part of the spoils system, when balked in this attempt, took revenge in so reducing the appropriations for state fire protection that the mere skeleton of an organization was left to cope with the problem. An area of forest as large as England was left in charge of so few men that each ranger had to oversee districts equal to the state of Connecticut in size. The appeals of the State Forester for proper support fell on prejudiced ears.

The suppression of forest fires in northern Minnesota is an immense task. The worst feature is that in dry times creeping fires penetrate the numerous peat bogs and there burn all summer, and can only be killed out by expensive trenching, yet at any time, when a hurricane arises, any of these fires can develop into the typical cyclonic sweep of flame which travels faster than a running horse and leaves not a living thing in its path.

The state forester called public attention to the existence of hundreds of these bog fires a few days before the holocaust, and warned the public of the extreme danger

of permitting them to burn. *No funds were left in the meagre state appropriation for extinguishing them.* Almost in echo to his warning came the unbelievably frightful destruction in the region south and north of Duluth.

The first step in preventing a repetition of this tragedy, doubly regrettable in war time, is the proper equipment of the state forestry organization with the funds they have needed and asked for. The second, without which no expenditure or effort by the state force will avail, is the determination of every citizen of northern Minnesota that forest fire must be banished from the region. A small blaze smouldering in a bog in an inaccessible tract of waste land is just as dangerous in Minnesota as a time fuse attached to a powder magazine in a munition plant.

Rumors have it that these fires were the work of pro-German and I. W. W.'s. No such explanation is needed. This appalling tragedy resulted directly, first, from the cynical indifference of the state legislature to the welfare of the public, and second, from the culpable carelessness of the settlers and residents in the ruined areas in permitting "harmless" fires to burn for weeks unattended, for lack of organized effort in extinguishing them.

EXPERTS of the National Lumber Manufacturers Association state that yellow pine lumber sufficient to lay a bridge floor 25 feet wide and 1 inch thick from the United States to France with 4,000,000 feet to spare, or an approximate total of 400,000,000 feet, was cut in American forests and transported to ship yards on the Atlantic and Mexican Gulf Coast for construction of wood vessels in a little more than a year.

DIGEST OF OPINIONS ON FORESTRY

LET US HAVE YOUR OPINION. WILL YOU NOT CO-OPERATE WITH US BY IMPRESSING UPON THE EDITOR OF YOUR NEWSPAPER THE IMPORTANCE OF FOREST CONSERVATION?

Newspapers are giving fine space to matters pertaining to forestry. The readers of American Forestry will do a great work by impressing upon the editor of their newspapers the importance of conservation at this time. Please send us any comment you see. Here follow comment and news articles:

CONVICTS IN FORESTS

Boston Post

What should be done, in addition to what is being done, for the prevention of forest fires? It is not only the great financial loss entailed, but it is the irreparable devastation wrought that every effort should be made to prevent. One of the great menaces to our woodland, greatest, in fact, of them all, is the litter of dead timber and accumulated brush. This inflammable material removed and the danger of forest fires would be lessened considerably.

It has been suggested that convicts should be employed at this work. The suggestion seems a good one. There can be no objection by labor bodies and the work would be beneficial for the reformation of the men themselves. Certainly convicts can be reclaimed better in the open than cooped up in granite cages so deadening to hope and so full of gloom and despair. This matter of employing convicts in our forests is important enough to attract the attention of our New England law-makers.

APPEAL TO STOP WOOD WASTE

St. Louis Globe Democrat

Julius Koenig, St. Louis city forester, made an appeal to the realtors of the city for co-operation in what he determines the proper disposal of trees and branches which annually are cut down and destroyed here. Hundreds of trees and dead branches every year are carted to the city dumps to be destroyed with rubbish or thrown into the river, Koenig claims.

"In these days of strife, when everyone is asked to retrench and conserve in every possible manner," Koenig said, "it appears that a matter heretofore not considered as important should be brought to the attention of the public and put into immediate practice.

"Each year hundreds of trees and branches are cut down within the city and are hauled away to the city dumping grounds to be burned or disposed of in some manner which benefits no one. As a matter of conservation, it would be wiser to arrange some means by which this wood could be utilized for beneficial purposes.

"It has occurred to me that this timber could be utilized to good advantage for heating purposes by those for whom it is difficult to obtain fuel. A system could be arranged by which the trees and branches, when cut down, could be taken to some specified location where they could be cut into stovewood and distributed among those who are unable to purchase coal.

"Such an arrangement would not only help to solve the fuel problem in certain districts, but would also save the city the time and expense of hauling the wood to the dumps. Many people would be more than glad to purchase the waste wood for fuel at any reasonable price."

MEMORIAL TREES

THE American Forestry Association has a nation-wide campaign on for the planting of trees as memorials to the nation's heroic dead and the idea has met universal approval, to judge by editorial and other current comment in the leading papers of the country.

The Trenton, New Jersey, *Times* says, editorially, that this suggestion has been made:

Every soldier or sailor who dies in the service of his country, the municipality from which he came shall plant and care for a tree in the public parks or along the streets, the tree to be dedicated to the memory of the dead hero. The suggestion is an excellent one and should be taken up and pushed by some one of the numerous organizations that are engaged in war work. It has both a sentimental and a practical value, and all the more commendable because of the fact that the War Conservation Board has decreed that no bronze or stone memorials to the dead shall be erected until after the war is over.

Manufacturers Record

But in America the necessity for reforestation is no less urgent and important to our national welfare. True, we have not been compelled to use our wood in quantity for fuel, but our consumption in other lines has been enormous, and we must be ready to supply our Allies with enormous amounts for wood for aeroplanes, gun stocks and for construction work. Hence it is seen what a drain is imposed upon America's forests. But it will not cease with the war. Rather, from present indications, the demand for wood in most lines will increase for many years after peace is declared. Hundreds of prospective builders are waiting for the war to close to build houses, and many manufacturing plants which would make frame additions are holding off until after the war. There will be a great demand for wood for constructing and manufacturing purposes in all countries, particularly devastated France and Belgium, which must be immediately rebuilt once victory is attained.

The situation, therefore, demands the immediate adoption of a nation-wide reforestation plan. No greater service could be performed to help the future civilization than to make certain a supply of necessary woods in America. The sooner this campaign is under way the better. Forests cannot be established as can other war-working institutions. We must insure a supply of wood for any and all future emergencies by reforestation now.

WOMEN TO TAP MAPLES

New York Times

Work in the orange groves of Florida and tapping trees for maple sugar in Vermont and New Hampshire are lines of winter work for the farmerette which were discussed at a meeting of the Women's Land Army of America at the Cosmopolitan Club.

YANKEE TREES FOOL FOE

A make-believe forest stands along the edge of the road at the entrance to the American camouflage station. It looks as natural as the real woods along the fighting front, with the shiny silver bark of the beeches, the rough, jagged trunks of the old apple trees and the sprouting tops of the dwarf willows, says a correspondent of the Associated Press.

Yet every tree in the camouflage forest has a steel core within which an observer peers forth to watch the movements of an enemy or a machine-gun is located to sweep forth from its hidden recess. They are only one of the many strange devices to deceive and mystify the enemy which this American camouflage station is sending forth to the fighting army.

camouflage station. It looks as natural as ducts of the war, even in the name, which was used for the first time by General de Castlenau, Chief of Staff of General Joffre. The word is not good French, but comes from the argot, or French slang, the verb "camoufler" being used by French police to indicate any disguise used to capture criminals.

THE NEED OF TREES

Notwithstanding the exigent state of affairs in which the carrying on of righteous war is the transcendent aim, writes John Y. Culyer in a letter to the New York Sun, our thoughts might well be shared at this season by a consideration of the practical value of tree planting, a matter of common interest, as of other necessities in fact, upon which health, comfort and happiness depend, such as food for man and beast, water supply, fuel in the form of coal, wood and oil, the means of shelter, etc. Not far removed in its dreadful significance from the appalling destruction of human life abroad is the devastation, and in many instances the complete destruction, of the woods and forests, the parks and gardens of France, Belgium and other fields of the sanguinary conflict in progress.

In our own country we can no longer delude ourselves with the boastful claim of an exhaustless timber supply. The shifting scenes of the lumber interests, the story of which is so startling as evidencing the magnitude of such inroads upon this once incomparable resource as to force upon us the widespread need of reproduction and the unremitting service of wisest conservation. Great areas of our middle Western States once invested with dense forests of valuable timber are now so bare as scarcely to yield a local supply of firewood.

The Middletown, Ohio, News Signal says

An oak tree is being planted along Tiffin's new \$100,000 river improvement for each soldier in Seneca county who has given his life for the cause of democracy on the battlefields of Europe, and the suggestion of Mrs. Henry S. Howland of Montclair, New Jersey

That a tree be planted in the town as a memorial for every soldier or sailor from the municipality who dies during the war occasioned favorable comment at a meeting of the Montclair Town Commission recently. The suggestion, made in a letter, was referred to Commissioner Harrison for consideration.

BIG FOREST RESERVE IN NEW YORK

A forest preserve of over 2,000,000 acres is assured to the people of the State of New York, and the purchase of more than 200,000 additional acres is now being negotiated with the owners, according to a summary just compiled by Conservation Commissioner George D. Pratt. The summary represents what has been accomplished by the Conservation Commission in the eighteen months since funds became available under the \$7,500,000 bond issue which the voters of the State approved for the acquisition of lands in the Adirondacks and Catskills for State park purposes, says an Albany dispatch to the Philadelphia Record.

The figures show that, since the approval of the bond issue, 460,731 acres of forest land have been offered for sale to the State, of which, after deducting such tracts as by their location were manifestly unsuitable for forest preserve purposes, 411,650 acres have already been examined and appraised by the Commission's foresters. This is an area almost one-quarter the size of the entire forest preserve owned by the State previous to the bond issue, which has gradually accumulated since the year 1883.

Of the 411,650 acres, of which the Conservation Commission has completed its inspection, it has agreed upon a price for 171,045 acres, and recommended their purchase to the Commissioners of the Land Office. This board has so far approved the acquisition of 156,398 acres—135,398 in the Adirondacks and 21,000 in the Catskills—and passed the cases on to the office of the Attorney General for the necessary examination of titles. The lands purchased in the Adirondacks average \$5.79 per acre, and those in the Catskills \$7.10 per acre. Altogether, a total expenditure of over \$900,000 is involved.

GROW TREES, SAVE PAPER

Trenton Evening Times

Timely recommendations are being made by the American Forestry Association, looking towards the growing of trees and the saving of paper for the conservation of wood pulp and wood.

Following the recent recommendation that trees be planted along highways and elsewhere as memorials to men in the service, P. S. Ridsdale, secretary of the association and editor of the Forestry Magazine, now backs up his production plea with a new conserving scheme. He advocates the writing of the carbon of your answer on the back of each business letter you receive.

This not only saves much paper, but also conserves filing and filing room and gives a compact record of business transactions. Mr. Ridsdale takes his own medicine and finds this plan works admirably in his own department, as well as in his own private office.

The need of saving paper is apparent when it is known that in 1918 America will use seven million cords of wood in the making of paper, a truly tremendous drain on our forests.

SAVE THE TREES

East Liverpool Review

The forest fires which swept Minnesota and Wisconsin recently were deplorable, not only for the tragic loss of life and the destruction of thousands of feet of lumber, but also because of the loss of the tree themselves. To love trees and understand their value, to be actively interested in their preservation, to guard in every possible way against their unnecessary destruction, and when a tree falls to plant a tree, is mere evidence of intelligence in man or nation.

PENNSYLVANIA TO PLANT WALNUT TREES

The project of John M. Phillips, of Pittsburgh, member of the State Game Commission, to have as many black walnut trees planted as possible by the people of Pennsylvania this fall, has been given the unqualified approval of that veteran woodsman and hunter, Dr. Joseph Kalbfus and the support of men connected with the State government, says a Harrisburg dispatch to the Philadelphia Inquirer. Robert S. Conklin, State Commissioner of Forestry, has been an advocate of tree planting, especially the nut bearing trees, for years and Dr. Nathan C. Schaeffer, State Superintendent of Public Instruction, is out with a proclamation that everyone should plant a tree next month.

"Mr. Phillips' idea of planting walnut trees is splendid and I hope everyone who can do so will plant as many as possible," said Dr. Kalbfus. "The tree is a valuable one, not only for its wood, but for its shade. This is the time of the year to get ready for it and I would like to see thousands planted. Ten years from now we would be thankful for it. The way to plant the tree is to have it so arranged that they can be thinned out and be spaced about forty feet apart. Get the nuts with the hulls on, crush the hull slightly and plant in about four inches of earth. Don't forget to plant hull and all."

THE WOODS AND THE WAR

Washington Post

If you want to forget the world war, accept the welcome of the hospitable woods and leave your troubles to the wind and the trees. There are no first-page headlines there. No talk of armistice. No clamor of war. No peace negotiations. No transatlantic conversations. No electioneering. No Politics. No adjournment. No food and fuel conservations. No tirades from the President. No tirades from former Presidents. No rattle of sabers. No scratching of pens. No delays in the mails. No vain telephone calls. No crowded cars. No liquorless bars.

Just now autumn's gay robes are fading. Gold and scarlet are turning to lemon and brown. The great beeches are already bare, but the royal oaks still flaunt their crimson vestments. White caravels sail in the sapphire sky.

Listen, and the whispering leaves will tell you of peace. The sunbeams will dance in the shadowy mazes to convince you that life—real, free, fresh, open-air life—is still filled with rapture. Your eye will sparkle and your heart beat higher. The air has the rich fragrance of sun-kissed, purple Burgundy. The October tonic is a sovereign specific for all the ills of mind and heart. None here can be homesick or heartsick. The cool breezes will smooth the wrinkled brow and quiet the feverish brain. No crowds. No haste. No worry.

No cure, no pay.

MAPLE SUGAR TREES

Investigations recently made in western North Carolina by M. W. Hensel, specialist in sugar plants for the Agricultural Extension Service, show that there are enough maple trees in this section to produce not less than 3,750,000 pounds of sugar annually, and that there is a strong possibility of this reaching 5,000,000 pounds. If properly worked these trees would produce this amount in a period of from four to eight weeks, or from about February 1st to April 1st, says a Raleigh dispatch to the Christian Science Monitor.

PLANTING WALNUTS

Massillon, Ohio, Independent

There are comparatively few black walnut trees left in the United States. Many persons have feared that the widespread quest of walnut for gunstock material would result in the utter extermination of this valuable tree.

SUSPICIOUS FOREST FIRES

St. Louis Post-Dispatch

Great destitution and suffering ordinarily follow forest fires of the extent of those reported from Minnesota. The appeal for the relief of the victims will be urgent and moving. State officials estimate that 100 square miles of territory have been devastated and 21 towns destroyed or damaged. They place the number of known dead at more than 200, expressing fears that it may reach 500. The most disquieting detail is that the fire, which wiped out vast amounts of timber useful for war purposes and other property was caused by incendiaries, presumably serving enemy ends. Domestic terrorism and destruction in the enemy interest would reach a climax in this disaster, if this charge is substantiated, exceeding even the scale of successful operations against steel works, munitions plants and docks.

The mere suspicion of a cause of this nature imposes the duty of a rigid sifting of the facts. A duty with priority even over this is to ascertain the measure of relief needed and supply it.

TIMBER FORESTS IN IRELAND

The Christian Science Monitor

Dublin, Ireland—Lord Powerscourt recently entertained the Irish Forestry Society on their annual summer excursion to the Powerscourt demesne. Between 30 and 40 members were present, including Professor Henry of the Royal College of Science, Mr. Knowlden, secretary of the Irish Forestry Society, and Mr. R. J. Kelly, K. C. Lord Powerscourt, who conducted the party through the beautiful woods and plantations, said that he hoped they would make their visit an annual one. He told them that his father had done a bold thing in the forestry line. He had selected a barren rocky patch of mountain and had spent some hundreds of pounds in planting a wood of over 400 acres. He himself had reaped the benefit. The wood had tided him over many difficulties and had stood well by him in these times when the difficulties in timber were so great. People with money were scarce and he thought the only thing to do as regards forestry was to try and compel the Government to do its duty and set up a state forestry department. The timber problem was one of extreme importance and neither the Irish Forestry Society nor any other society could deal with it. It was a problem to be solved by the Government and by the Government alone.

RICHES IN PINE WASTE

The industrial value of a full grown pine tree is no less than five times what we get from it, writes Arthur D. Little in "Chemistry in Overalls." If, of all the yellow pine cut, the entire trees were used not only as theoretical science teaches, but according to known and proved methods of applied science there would be added to the estate of the American people every day 40,000 tons of paper, 3,000 tons of rosin, 300,000 gallons of turpentine and 600,000 gallons of ethyl or grain alcohol, together with the fuel for these industries and the lumber we get as it is.

SAVE THE BIRDS!

Charleston News and Courier

The advantages of preserving the insectivorous song and game birds have never been more apparent than now, and it is a gratifying fact that the last three or four years have shown a wonderful increase in bird life in this State.

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BOOK REVIEWS

Manual of Tree Diseases, by Howard Rankin. The Macmillan Company, New York City. Price \$2.50. This volume treats of the diseases of the more common trees of the United States. The discussions are grouped into chapters under the common name of the tree affected and the chapters are in alphabetical order, which facilitates the use of the book for reference. In one general chapter are included discussions of the diseases common to all kinds of trees, such as sampling off of seedlings, temperature injuries to leaves and woody parts, smoke and gas injuries, woodrots, etc. The species of trees affected, their geographic distribution, the symptoms of the different diseases and their particular destructive qualities are presented fully and clearly. The casual agent of the disease is briefly described and when it is caused by a parasite, some descriptive details of the life history of the parasite are given, with valuable suggestions as to control, and tree surgery is given separate and special treatment.

Our National Forests, by Richard H. D. Boerker. The Macmillan Company, New York City. Price \$2.50. Dr. Richard H. Douai Boerker, who has for more than ten years been in close contact with the federal forestry movement, in his new book, "Our National Forests," covers the subject exhaustively and, at the same time, in a most readable manner. The book is divided into four parts: I. The Creation and Organization of the National Forests. II. The administration of the National Forests. III. The protection of the National Forests. IV. The Sale and Rental of National Forest Resources.

That the disappearance of forests means the ultimate disappearance of everything in civilization that is worth while may seem like a broad statement but that it is a truly accurate one is proved conclusively in Dr. Boerker's interesting and stimulating study. According to the author of this scholarly survey, the sins committed against a nation's forests are visited again, and swiftly and surely, upon the inhabitants thereof. The punishment may take the form of timber famine, or it may express itself in failure of water power. Floods are another terrible form of punishment visited upon those who neglect and misuse forest resources. Following closely in the wake of floods come the covering of fertile bottom-lands with gravel, boulders and debris ruining the land beyond redemption. Erosion of soil is another inevitable consequence of for-

est abuse and neglect. Last, but not least, the drying up of springs and the transition from a luxurious, well-watered country into a veritable desert is the inevitable result of forest misuse.

Solemnly biblical, Cassandra-like and out-of-date as all this may sound, it is, none the less, a very present and real danger, a following of cause by effect, the visiting upon the negligent, the prodigal and the unwary of swift and terrible penalties in the present and future as in the dim past.

BURN WOOD—SAVE COAL

WOOD is to play a conspicuous part in the nation's work again this winter, according to an announcement of the United States Forest Service. An appeal has been issued to farmers who own woodlands and people in cities, towns and villages who can purchase wood from nearby farms to help in the coming winter—as last winter—to relieve the demand for coal and the strain on railway capacity by burning wood in place of coal. And responses to date indicate that the American people who can will do this very thing.

It is not expected that the substitution of wood for coal will be universal, but it is declared that for heating many kinds of buildings wood is the more convenient and cheaper fuel. This is particularly true in the case of churches, halls and other buildings for which heat is required only occasionally, but then is wanted in large volume on short notice.

The most common method of making cordwood is to cut the trees into four-foot lengths with an ax and split the larger pieces, which are then piled in a standard cord, eight feet long, four feet high and four feet wide. The contents are 128 cubic feet, of which 70 per cent is wood and 30 per cent air. Wood cut four feet long can be sold to brickyards, limekilns, metal-working plants and other industries, but is too large for household uses.

Another method, and one better adapted for old growth hardwoods, which are difficult to split, is to saw the tree into logs of convenient lengths, say from ten to fifteen feet. These are "snaked" out to the edge of the woodland and there sawed into lengths and split into sizes proper for the stove or furnace. The sawing is usually done by machine, driven either by gasoline or by electricity. The wood is piled four feet high and eight feet long, such a pile being called a "stove-wood" or "running" cord.

Firewood is expected to bring a better profit this year than ever before. It is a much less perishable crop than many which the farmer raises. When properly piled the better kinds of wood will last from two to three years.

CANADIAN DEPARTMENT

BY ELLWOOD WILSON

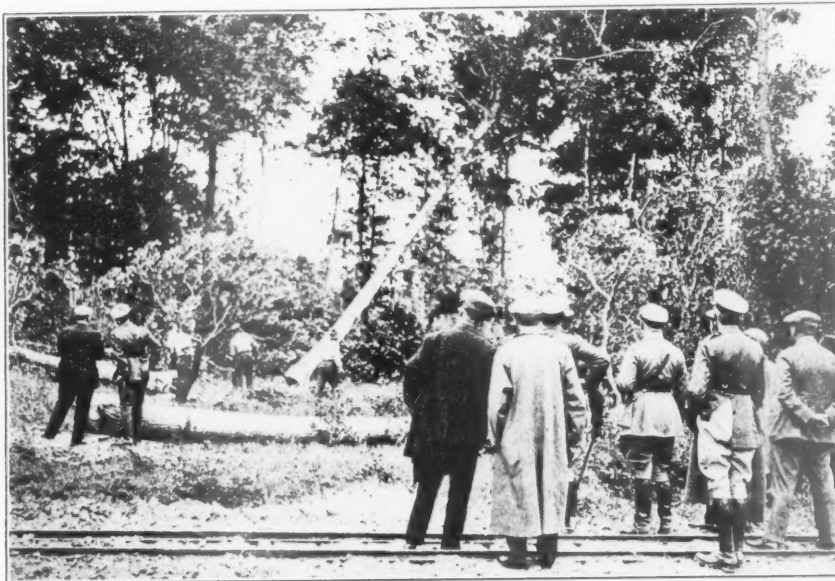
PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

THE special propaganda car of the Canadian Forestry Association which has been touring the Eastern Provinces in the interest of forest protection, was unfortunately in a collision and somewhat damaged. Fortunately very little of the equipment was injured and Mr. Black, the indefatigable Secretary of the Association, immediately transferred his exhibits to another car and is continuing his trip. The success of the tour has been remarkable and much benefit is expected from it.

The epidemic of influenza has had a disastrous effect on logging operations. Labor

will be finished in the spring. The sample plots already laid out are most interesting and much information of extreme value to foresters and lumbermen will be obtained each year.

The Entomological Branch of the Department of Agriculture has just issued the second volume of Prof. J. M. Swaine's book of the Canadian Bark-Beetles. This is an extremely interesting and valuable work, well gotten up and illustrated, with keys for identification. Foresters will find it very useful. We are coming to realize



Underwood and Underwood—British Official Photograph

TIMBER!

Falling a tree in a French forest, and the operation is being watched with great interest by the official party of Canadian journalists who recently visited France.

was already very scarce and so many men have been ill that the cut of logs for the coming winter will be very small. This is the time of year when the cutting goes ahead the easiest and the most rapidly and it has been practically lost. Sanitary conditions in the logging camps, none too good at the best of times, became very bad when the grippe attacked them and it has been necessary to send doctors and nurses in to help the men.

The Commission of Conservation had begun the building of a permanent camp near the sample plots established by Dr. Howe during the past summer and the frame is now up and a temporary roof on and this

more and more that insect ravages of our forests are only just secondary to those of fire and that measures must be taken to protect our trees from insects and fungi. We have so little knowledge of the life habits of these pests that much work must be done in many cases before any intelligent means for control can be taken. It would seem as if one of the first steps would be the destruction of all logging debris by fire so that many of the insects and fungous diseases would have no breeding place.

George Chahoon, Jr., President of the Laurentide Company, has given his services to the Government and is in charge of the



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executive work of one of the Government plants for making poison gas. Mr. Chahoon has always taken a great interest in the development of Forestry and is a member of the Canadian Society of Forest Engineers and a Director of the Canadian Forestry Association. The founding of the St. Maurice Forest Protective Association was in large measure due to his support and active co-operation. All movements for the protection and perpetuation of the forests had his active interest. Mr. Van de Carr, Superintendent of the Ground Wood Mill of the same company, has followed Mr. Chahoon into gas work.

The increasing interest being taken by lumbermen and pulp and paper manufacturers in forestry matters is very encouraging and it is safe to say that as far as eastern Canada is concerned forestry has made as much if not more progress than on any part of the continent and that future prospects for practical forestry are very bright.

IMPORTANT FOREST LEGISLATION IN CANADA

THROUGH the representation made by Clyde Leavitt, Chief Forester for the Conservation Commission, and the very active interest of the Deputy Minister, Col. T. G. Loggie, who has advocated such and Mines, Hon. E. A. Smith, a new Forest Act was passed, and the Forest Fires Act revised during the last session of the legislature. These two acts comprise the most advanced piece of legislation concerning forest protection on the continent.

The Forest Act provides for a Crown Land Advisory Board composed of the Minister of Lands and Mines, Deputy Minister, Provincial Forester and two others; one elected by the Crown Land licensees and one chosen by the Minister to represent the granted forest land owners. This advisory board has the power to make all permanent appointments and to supervise all matters in relation to the Forest Act.

It provides for a sufficient fund to carry on the administration of the Crown lands, for the division of the Province into districts, and for the appointment of Forest Rangers by competitive examination on a merit basis for these districts. The rangers' duties include fire protection, scaling and the protection of game.

The examination for forest rangers consisted of a written test on fire protection and scaling, an oral test and an actual scale of a large number of logs. The examination was modeled after the U. S. Forest Service examinations and worked out fairly well to all concerned.

The Board of examiners consisted of the Provincial Forester as Chairman, one expert scaler, and one practical lumberman and woodsman.

It is interesting to note that 152 men wrote the examinations, that 76 passed and that the appointments of rangers and inspectors to the thirty-six districts in the Province have been practically completed from the pass list irrespective of any political influence or patronage.

Moreover, it is the aim of the present Minister of Lands and Mines to keep the administration of his Department entirely free from politics and to build up a permanent organization on a strictly merit basis.

Through the continued co-operation of the New Brunswick Government and Railway Commission, the work of fire protection along the right of way was continued with beneficial results, and it is worthy to note that both the Provincial Fire Inspector and his assistant for the Railway Commission are university graduates in forestry. It was the first year that systematic locomotive inspection was carried out by the inspectors in New Brunswick.

The co-operation between the New Brunswick Government and the Canadian Government Railways was much improved. The concession of the General Manager of this Railway to the New Brunswick Government's inspectors to examine their locomotives for fire protective appliances resulted in considerable improvement in the fire situation; nevertheless it is felt that much better results can be obtained if the Canadian Government Railways were placed under the jurisdiction of the Railway Commission of Canada.

Much credit is due to the Canadian Forestry Association for the interest taken in the progress of forestry in this province especially so in the distribution of propaganda relative to fire protection and legislation. Through co-operation with the Dominion Forestry Branch, this Association had Mr. Doucet give a series of lectures on fire protection in northern New Brunswick. The operation of a demonstration car in conjunction with a series of illustrated lectures in this Province, during the latter part of the season, was the outcome of the Association's activities. The work of this Association is highly appreciated, and the Government hopes to continue in co-operation with the Canadian Forestry Association in the future.

In co-operation with the Dominion Branch of Plant Pathology the Government obtained the services of Professor R. B. Miller, Dean of U. N. B. Forest School for part of the time, and his investigation study of plant and tree diseases are of the greatest importance.

Mr. Tothill of the Dominion Entomological Staff has continued his investigations of the spruce bud worm in this Province. Mr. Swain spent nearly a month on areas in New Brunswick infested with the bud worm, making a study of the bark beetle and wood borer that follow in the wake of the pest.

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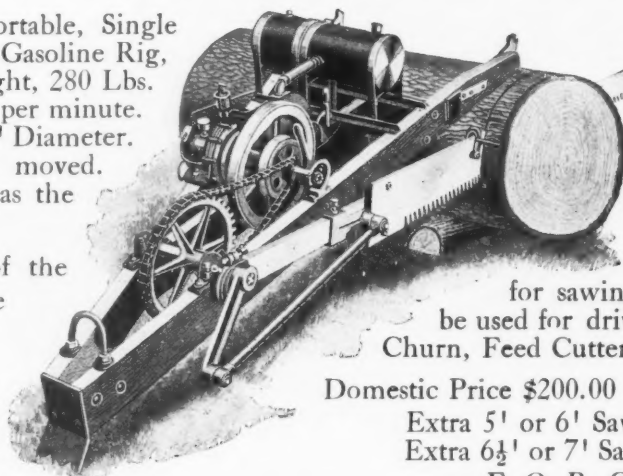
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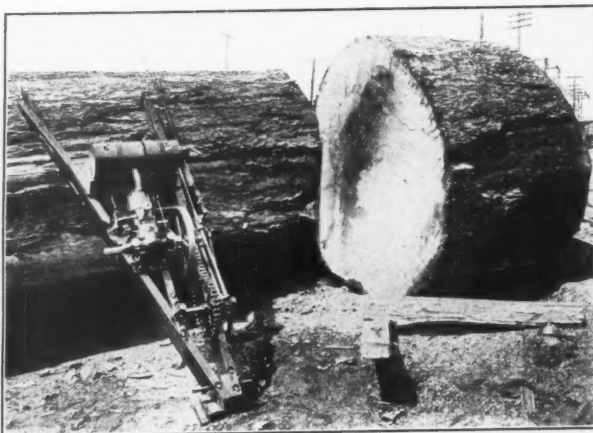
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Declaration of Principles and Policy of The American Forestry Association

IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watersheds; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people; that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products; employ 735,000 people; pay \$367,000,000 in wages; cover 550,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions; that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration and management respectively; adequate appropriations for their care and management; Federal co-operation with the States, especially in forest fire protection.

State Activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State and fire protective agencies, and its encouragement and extension, individually and by co-operation, without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose; and also planting by private owners, where profitable, and encouragement of natural, regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid the lumberman in achieving this.

Cutting of Mature Timber where, and as the domestic market demands it, except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal Protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classification by experts of lands best suited for farming and those best suited for forestry; and liberal national and State appropriations for this work.



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She wants your name—and yours—and yours—the names of all her children.

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